

University of Penna.
1870.

Introductory

Lecture

on

Jenner

Vaccination



to the 5th Course of the

Aux. Faculty of Medicine, Univ. of Pa.

March 28th 1870.

Our presence here today, gentlemen,
invites ~~is the occasion~~ reminiscences of the past. This Uni-
versity has a history, which has been written, ^{and} well
written, by one of the most honored members of its
Faculty. More than 50 years ago, in 1816, ^{as we read in Dr. Carson's ^{excellent historical} volume,} the Trustees
of the University created in it its ^{first} Faculty of Natural Science.
The appointments therein were as follows:

Dr. W. P. C. Barton, Professor of Botany.

Dr. Chas. Caldwell,

of Natural History.

Dr. Thos. Cooper

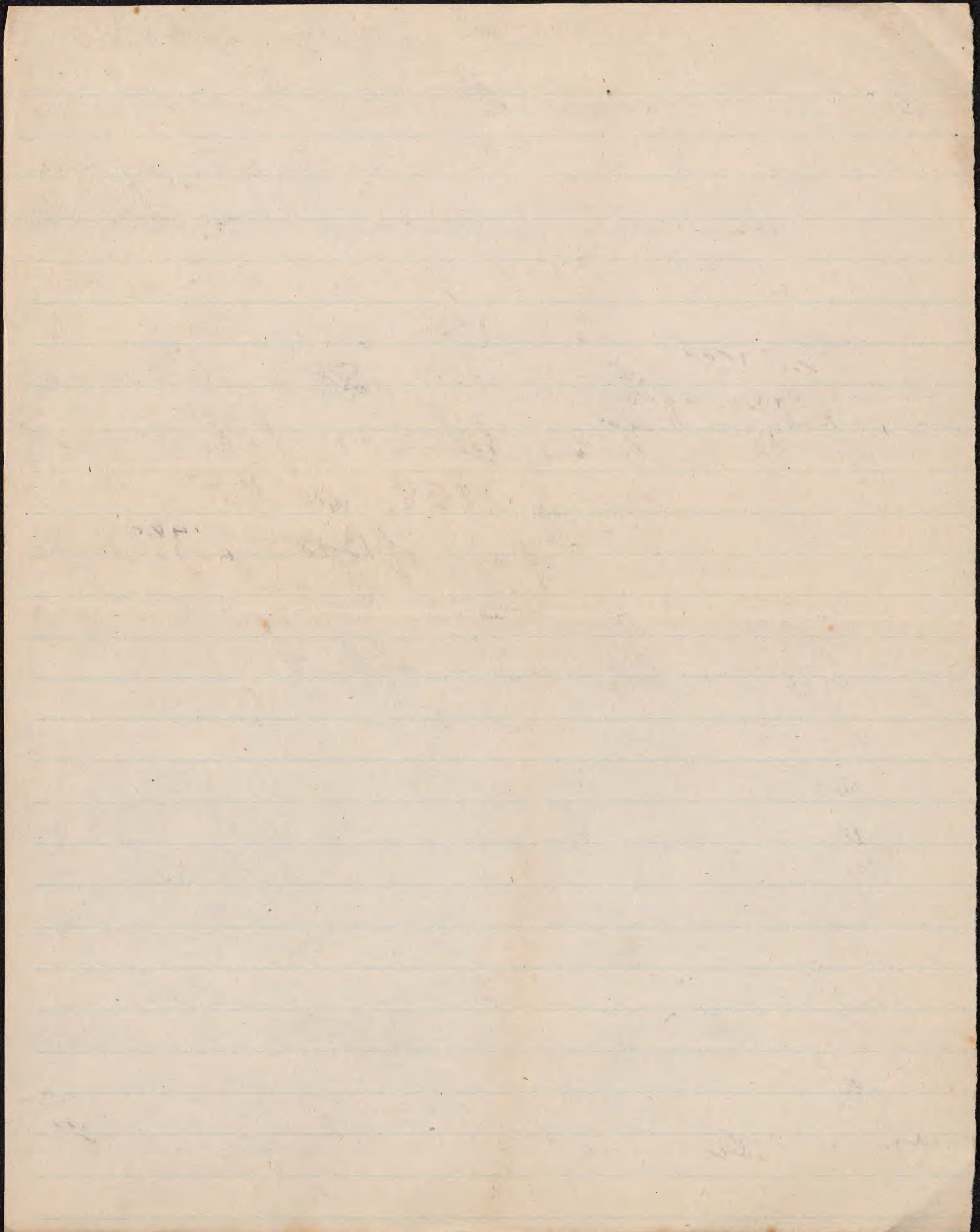
of Mineralogy & Chemistry.

Dr. Thos. T. Uemson,

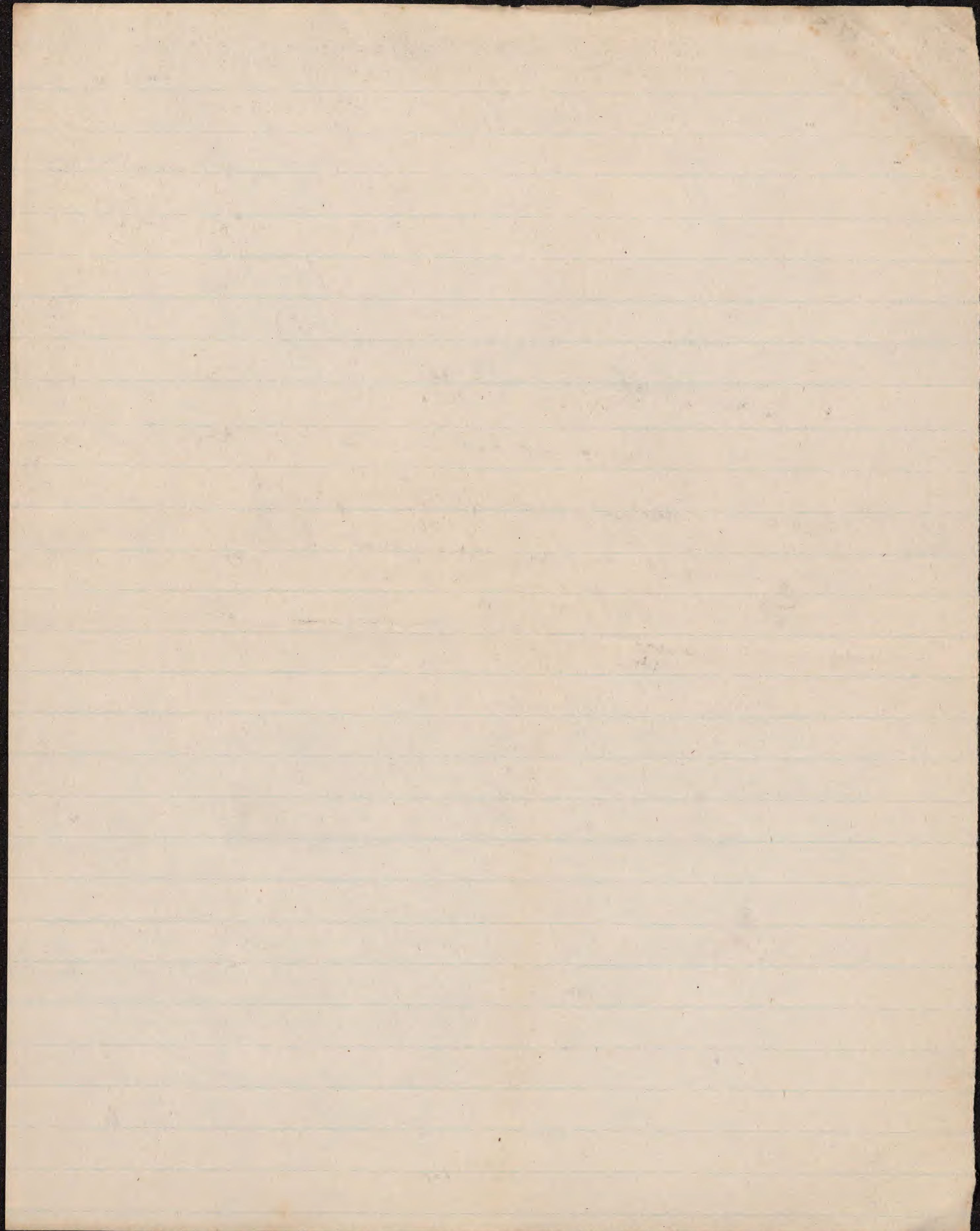
of Comparative Anatomy

A Professorship of Natural Philosophy was at the same time transferred from ~~its~~ place, previously held, in the Medical Department, to ^{one in} this Faculty of Natural Science; but it does not appear to have been filled at that period.

re-
cently ~~only~~ made ^{fully} practicable, ~~made~~ by the liberality of one
whom, it appears to me, more than all others the Uni-



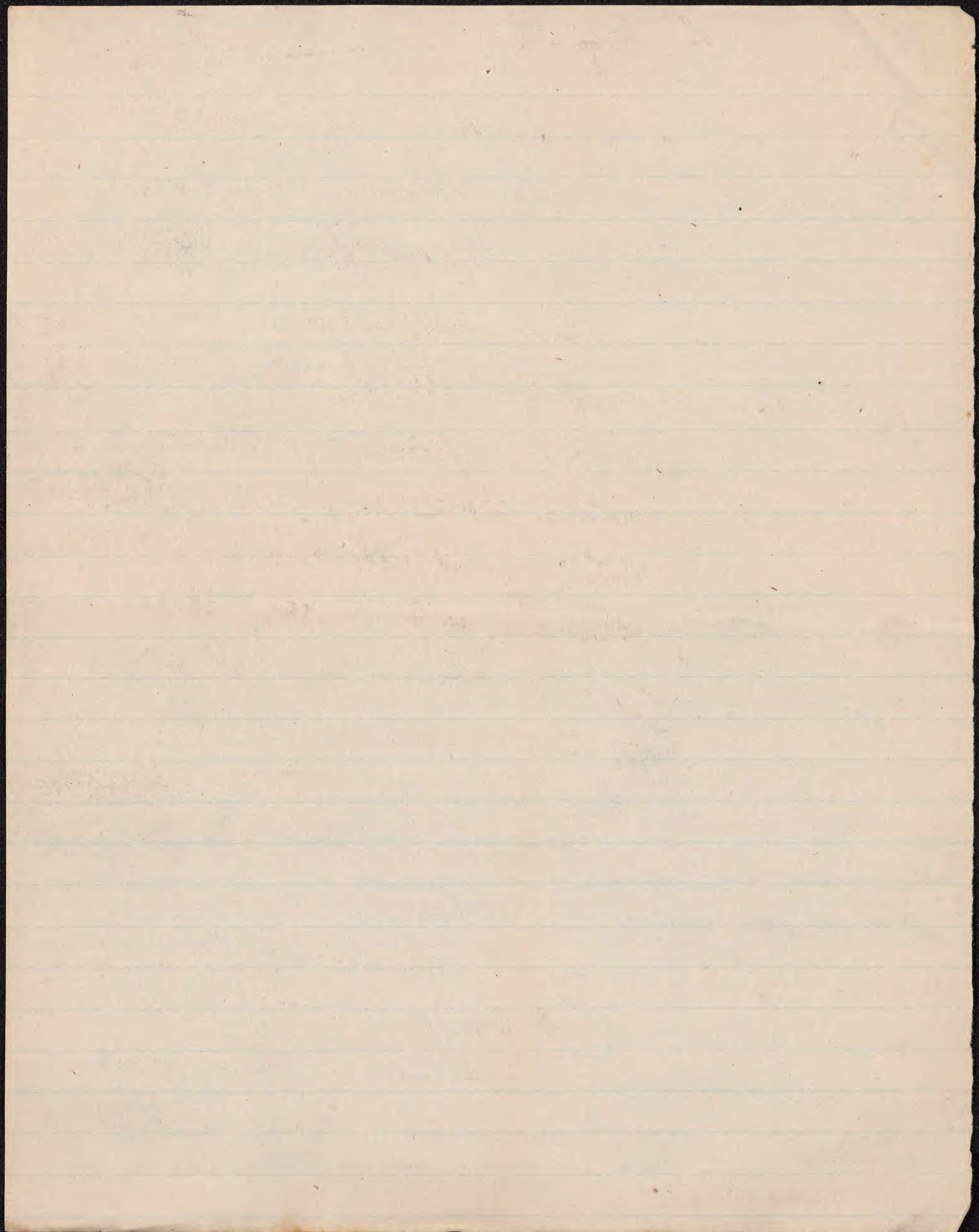
-versity, and the medical profession of Philadel-²
phia, ought to delight to honor, is most fully
sanctioned by an earlier conception, and par-
tial realization. Much sooner, ~~still~~, the
direct connection between natural science and
Medicine was, here, recognized. One of the
first members of the Faculty, ^{in the} initial organiza-
tion ^{of the institution,} Dr Adam Kuhn, delivered a full course of
lectures on Botany, in 1768. Mr William Bar-
tram was elected Professor of Botany, in 1782. Dr
Benjamin Smith Barton delivered twenty-four courses
upon botany, in ~~the~~ ^{successive} summers, while he was Profes-
sor of Materia Medica, and afterwards, for a short time,
of Practice. Dr Barton may be remembered as, with the
exception of Dr Kuhn, the first public teacher of Natural
Science in the cis-Atlantic world. His influence, in
this department of study, was great. In Dr Carson's
words, "He created a taste for these pursuits,
that has never been lost in this community;
and which has ultimately developed itself in per-
manent establishments for the cultivation of the
Natural sciences." Besides Dr W. P. C. Barton



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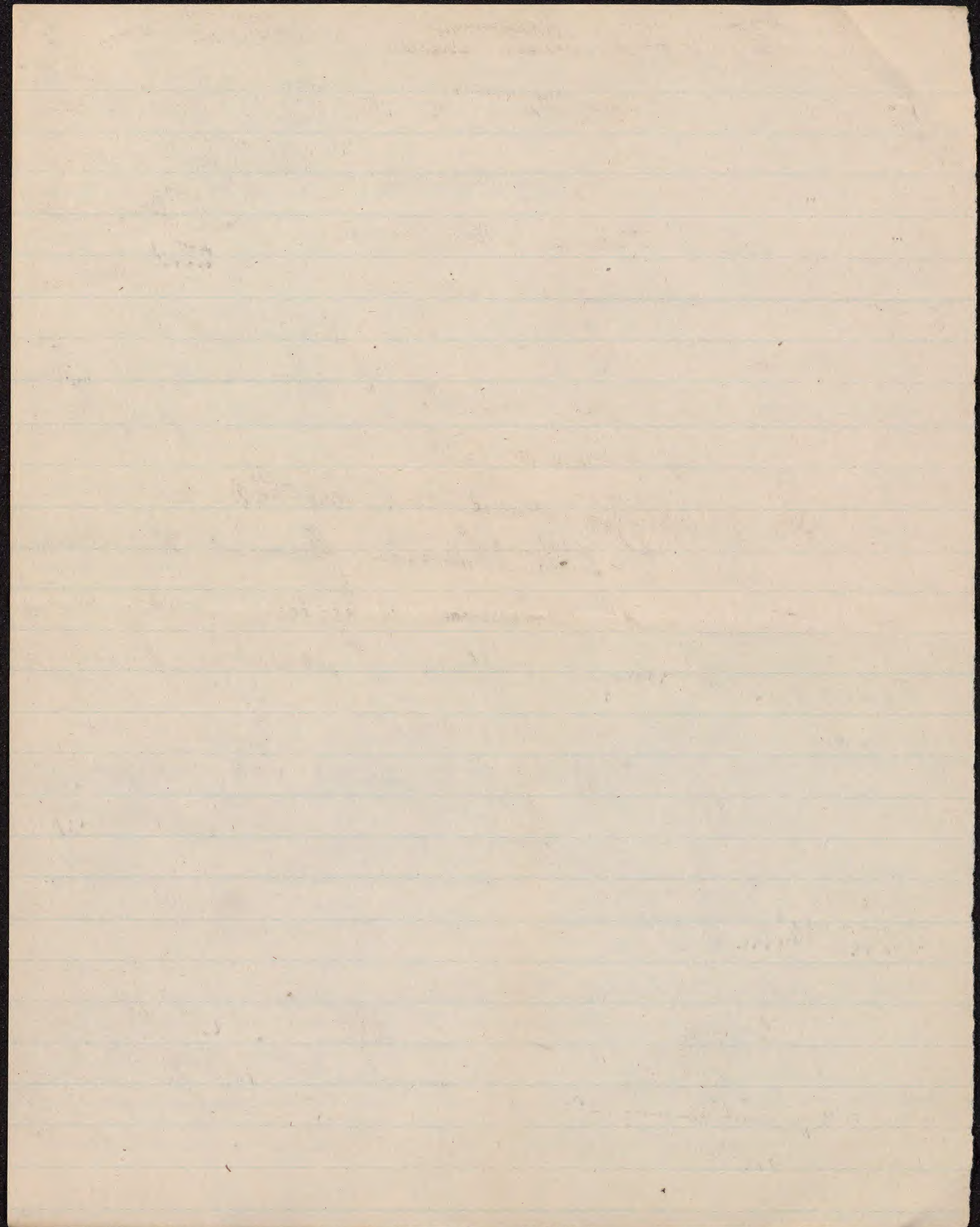
~~and~~ ^{others,} Dr Bigelow and Baldwin, the science
of botany owes ^{to him} much ~~to him~~ as the preceptor of
Dr. William Darlington; so long known as the most pop-
-ular, if not the most celebrated, botanist of our state.
It is not needful for me to add, that this science
has, since that time, been continuously ^{and ably} represented in this
University, - in the teachings of Dr George B. Wood, who
belongs to our present as well as to the past, and in those
of Professor Carson, and of Professor ^{H.C.} Wood, of the faculty.
on whose behalf we are here met to-day. That such
instructions, and the labors and publications of such men,
with those of Wistar, Rodman and others of our profession
in ~~the~~ ^{the allied} departments, contributed as much as any influences what-
-ever to make this city a scientific centre, is not to be doubted.

But, the days which I have referred to in this
retrospect were those of the golden age of medical
ability in Philadelphia; the days of Rush, Physick,
Wistar, Dorsey, the Bartons, Dewees and others, who made
~~for~~ for this university and for the city that reputation which
constituted it the medical metropolis of the country; a reputation,
gentlemen, which we may wish, - and I would venture to call
on you, as members with us of the University to determine, shall
never suffer decline.



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In that favored period, then, the idea was, as we have seen, fully accepted, that the education of every physician ought to be liberally scientific. But this was ~~not~~ ^{then} at all a new idea. It is even as old as Hippocrates; as Medicine itself. The 5 years' preparation of the Sons or priests of Aesculapius involved, before initiation into the mysteries of the profession, a careful study of, and illumination in, the general or accessory sciences, as far as ^{they were} then known. The very word, physis, like physics and physiology, is derived from ~~φύσις~~ φύσις, nature. That, in many quarters, medicine has been, ~~separated~~ ~~from~~ and, in some is yet, allowed to fall out of its ~~rank~~ ^{kind of} legitimate relations with all other ^{general} natural knowledge, is to be ascribed to the same causes as those which ~~have~~ left the Colleges and Universities of Europe ^{for a long time} so far behind the ^{general} progress of mankind, ^{buried in their} as to require, in our day, a vigorous, & yet incomplete, effort of reform.



The idea that these relations are (5)
positive and important is a true one. For,
is not medicine a science? Every ^{advanced} art is a
body, of which science is the soul. And ^{medicine} ~~it~~ is not
either a metaphysical or a mathematical science;
therefore certainly ^{one of the} ~~it~~ natural or physical sciences.
Moreover, as time goes on, this truth becomes more
and more of moment. The need of the scientific
spirit, ~~the~~ ~~the~~ mind and method, grows more
and more imperious to the physician, because of the extension
of the materials and processes of his own art, — and,
also, because the general diffusion of scientific knowledge
makes it impossible for him, without it, to keep upon
the level of the minds of those about him. It is alto-
gether a mistaken notion, therefore, that a physician can do
~~anything~~ in our times, and in this country, with a mere
routine knowledge of drugs and symptoms, without a cultiv-
ated intelligence. What he needs, as much as any one,
for any vocation whatever, is, ~~the~~ first of all, the
training and development of all his faculties;
and, among them, ^{especially} ~~the~~ those of observation and judgment.

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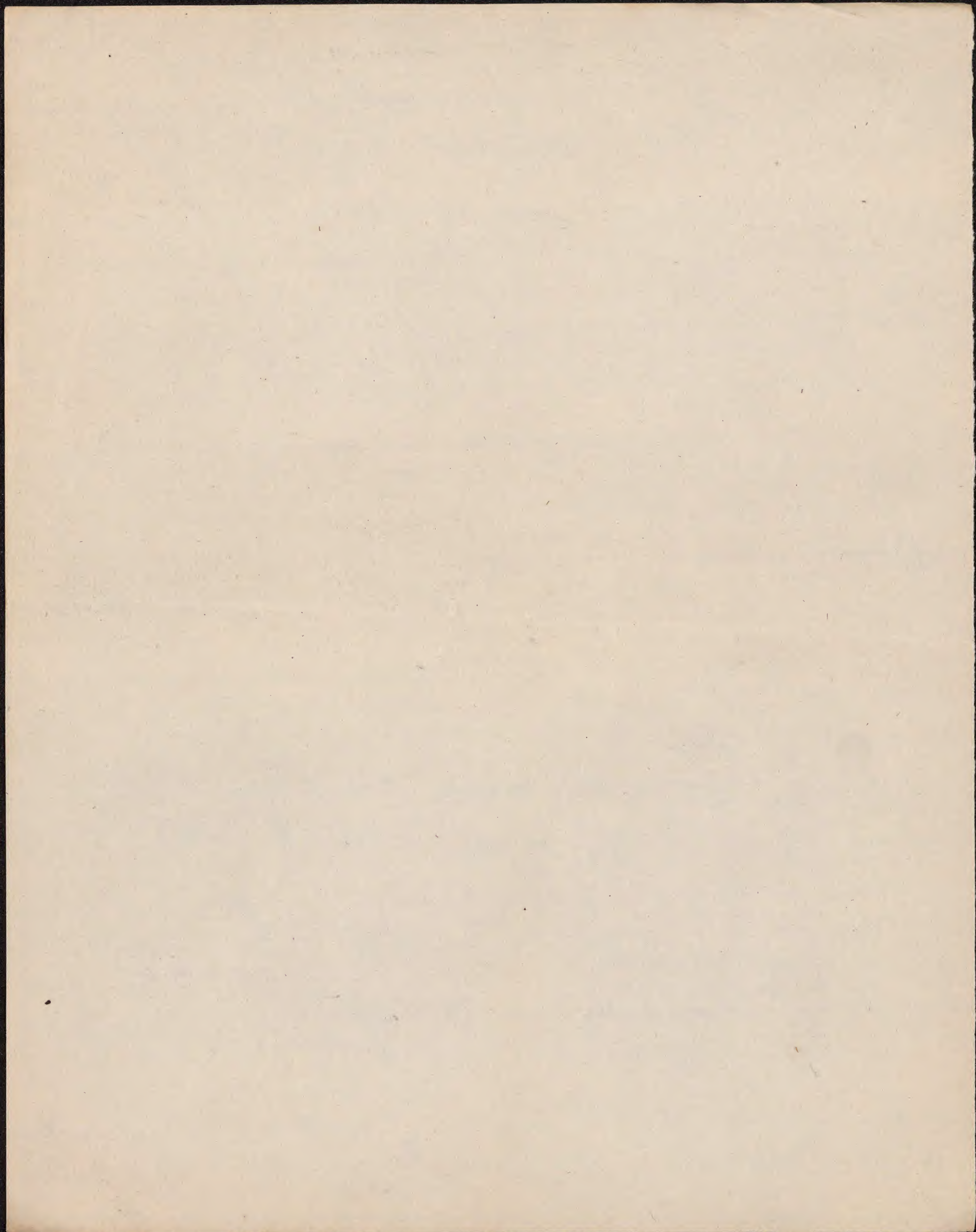
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Of the physicians of all time, who
have been the greatest, and most celebrated?
Assuredly those who have been the most scientific.
This applies to those who were expressly practical;
as Hippocrates, Galen, Sydenham. But it is
even more remarkable in those ^{who were the} magnates of discovery, as
Harvey, Jenner, Laennec.

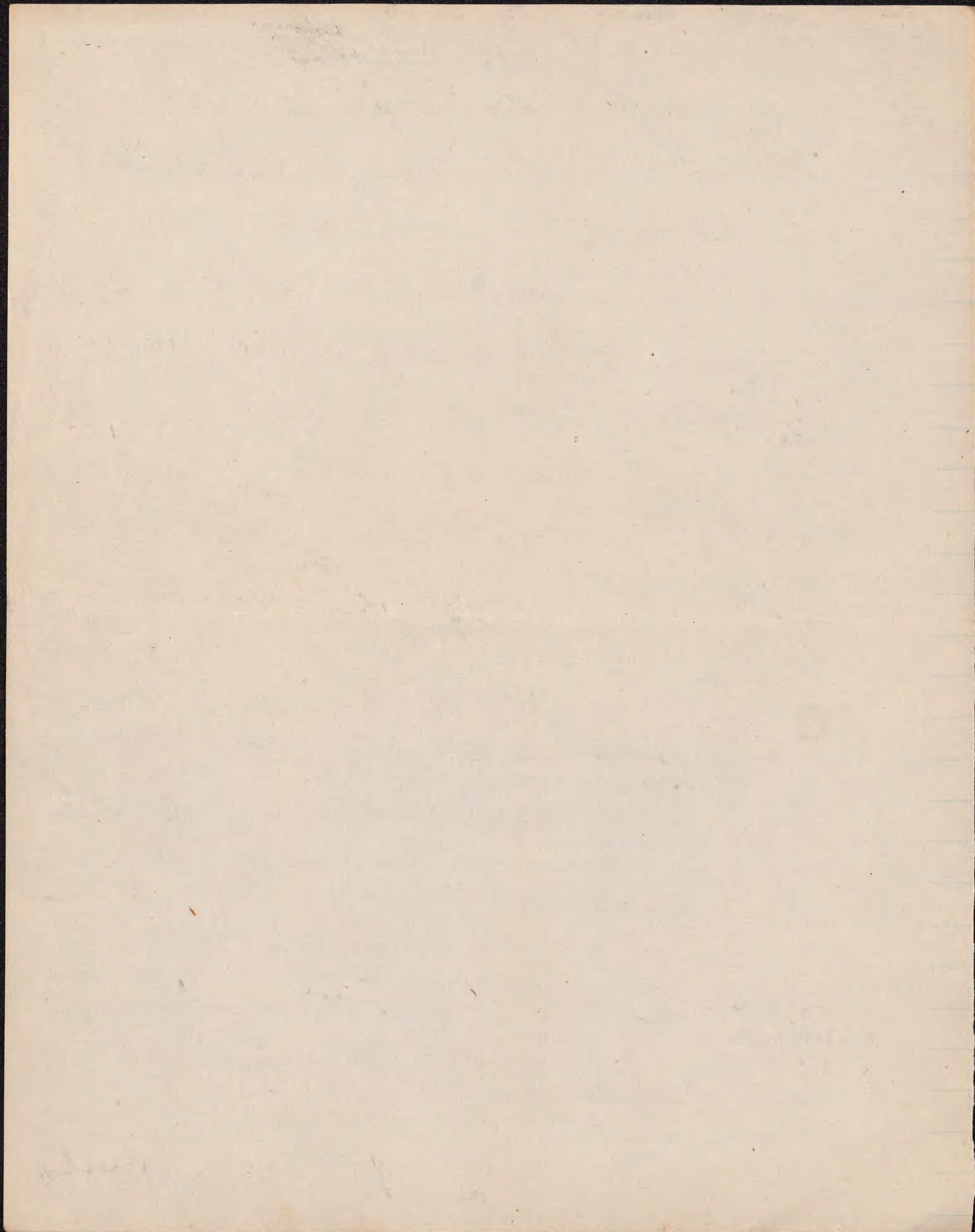
So admirable is the example furnished by
~~the~~ ~~one~~ of these, Jenner, of the combination of the
scientific spirit with the ^{practical} mind of the ~~practitioner~~
~~of medicine and surgery~~ physician and surgeon,
that I propose to ask your attention for a
short time to the prominent incidents of his career.
This is the more apropos, because that which
made him stand highest in public favor and
enduring renown, the discovery of vaccination, is
immediately related to a subject ^{which} ~~is~~ will ~~be~~ before
us in ~~our~~ coming lectures, - that of public hygiene;
and, moreover, because a more than ordinarily injurious
effort of medical scepticism has, latterly, threatened to un-
settle the confidence of the community, and, if possible,



of the profession, in its value.

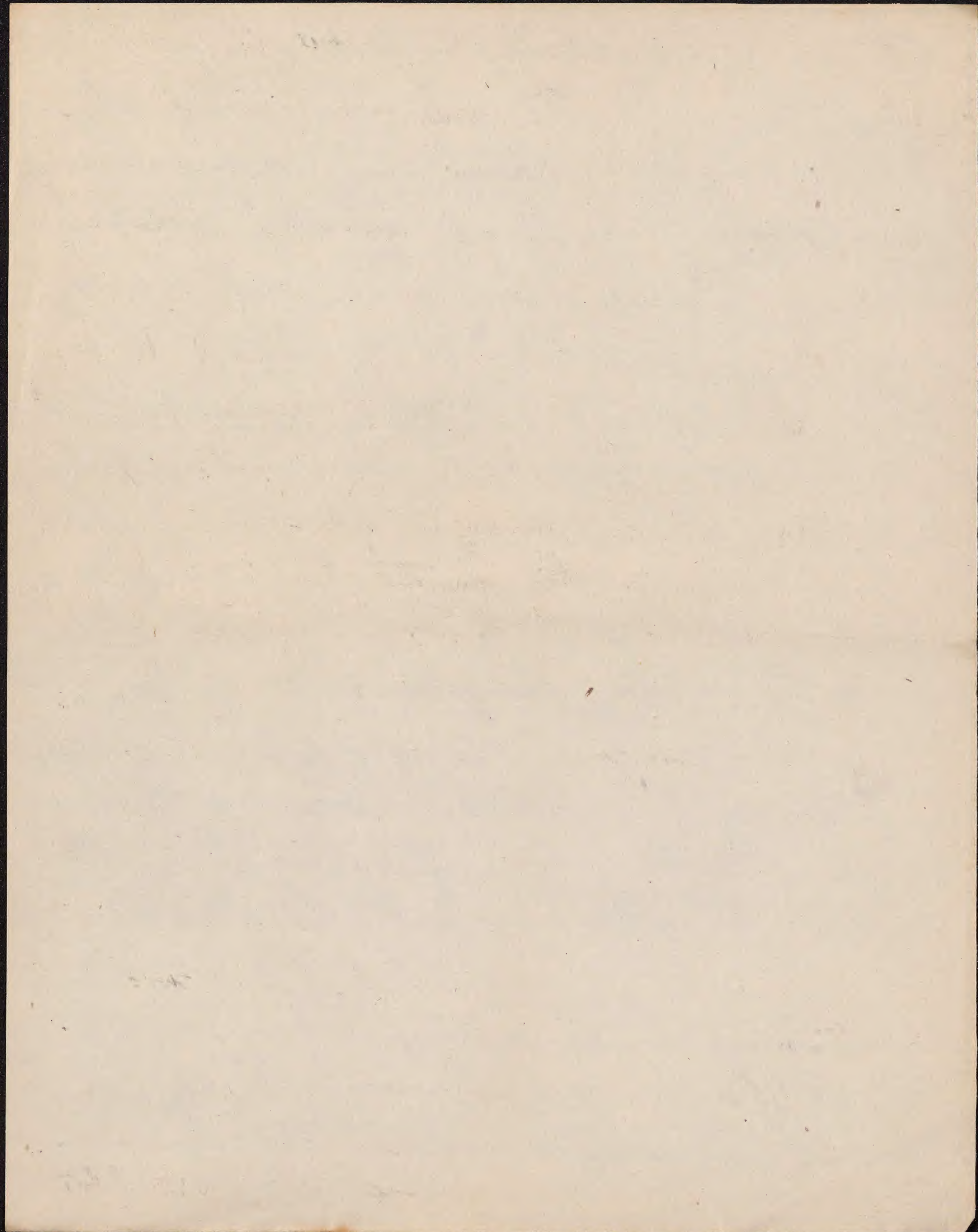
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Dr Edward Jenner, it may interest some of you to be reminded, was a country Surgeon and physician. The son of a clergyman of good family, in Gloucestershire, ~~He was~~ born in 1749, ~~he~~ was well taught in the country, until old enough for surgical and medical study. ^{study} This ^{was} first conducted by an eminent surgeon near Bristol; and ~~then~~ then concluded by a two years' residence ~~in~~ ~~at~~ in London, as a favorite pupil of John Hunter. Jenner had early shown a strong taste for the ~~study~~ ^{knowledge} of nature; but this was fostered, directed and trained, in an eminent degree, by the influence of Hunter's master mind. If this great Surgeon, physiologist and naturalist had left no ^{original} ~~works~~ ^{works} of his own, we might almost say that the world owes him Jenner; as it is very doubtful whether the difficult problem of vaccine inoculation would ever have been wrought out, ~~in~~ ^{through} all its ~~abstractions~~,
~~abstractions~~



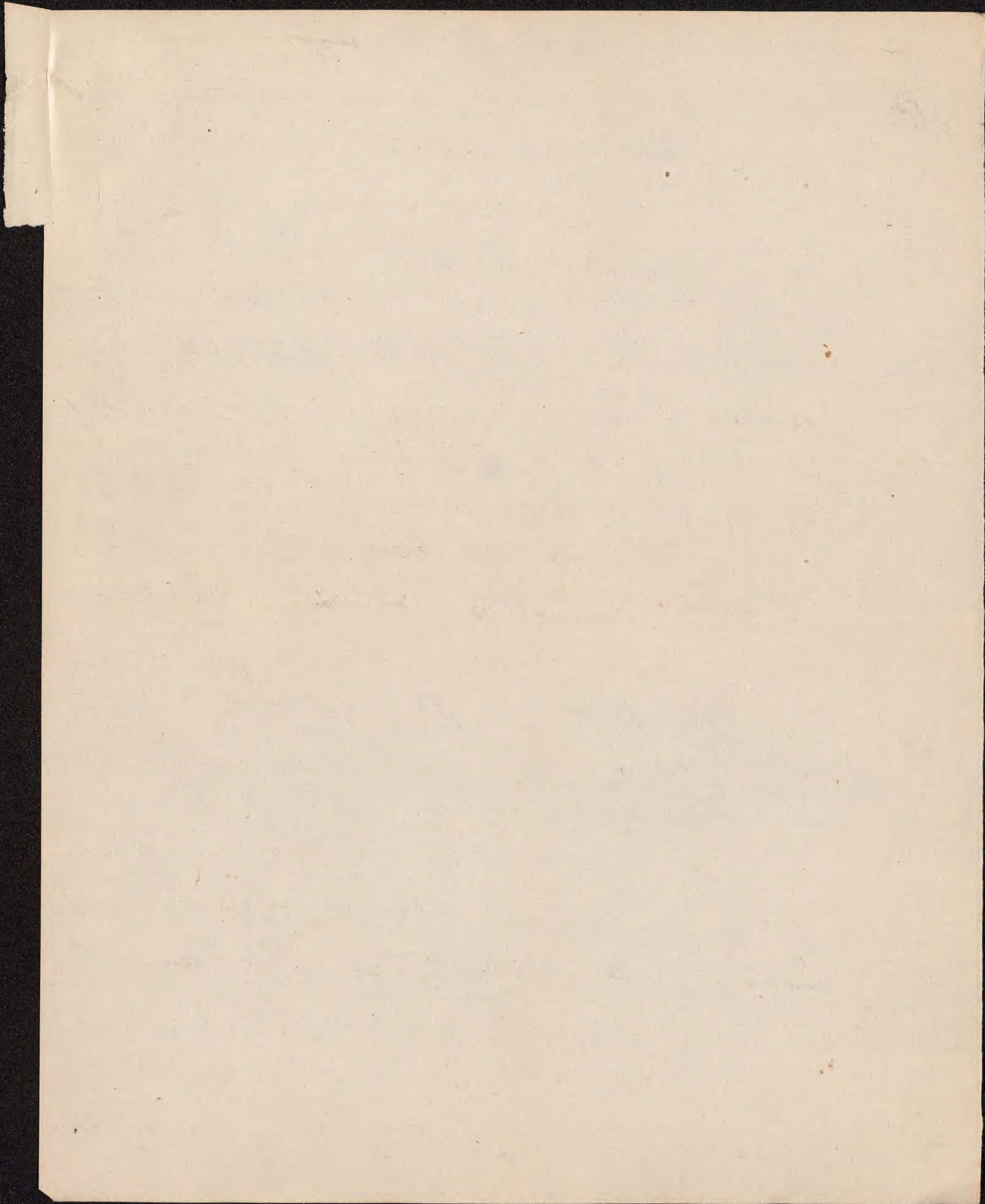
to its glorious end, but for ~~the~~ vigorous (8)
culture, and at the same time severe discipline,
of the investigating faculties, which hunters
precept, example, companionship and life-
long correspondence gave him. While in London,
a new impulse to his love of natural history
came, through the opportunity to arrange and pre-
pare the valuable specimens collected ⁱⁿ Capt. Cook's
first voyage of discovery, by Sir Joseph Banks.
Jenner was an admirable dissector of delicate structures;
as was shown by a preparation ^{of his} long preserved, perhaps
yet in existence, representing the progress of the ovum
of the chicken, from its first germination to the end
of incubation; every part being shown with the most perfect
skill.

Returning from London, he began
the active practice of his profession; and soon
acquired a very good, but not too engrossing a business,
he found leisure, in his daily rides over the country,
which, in the beautiful valley of Gloucester abounded



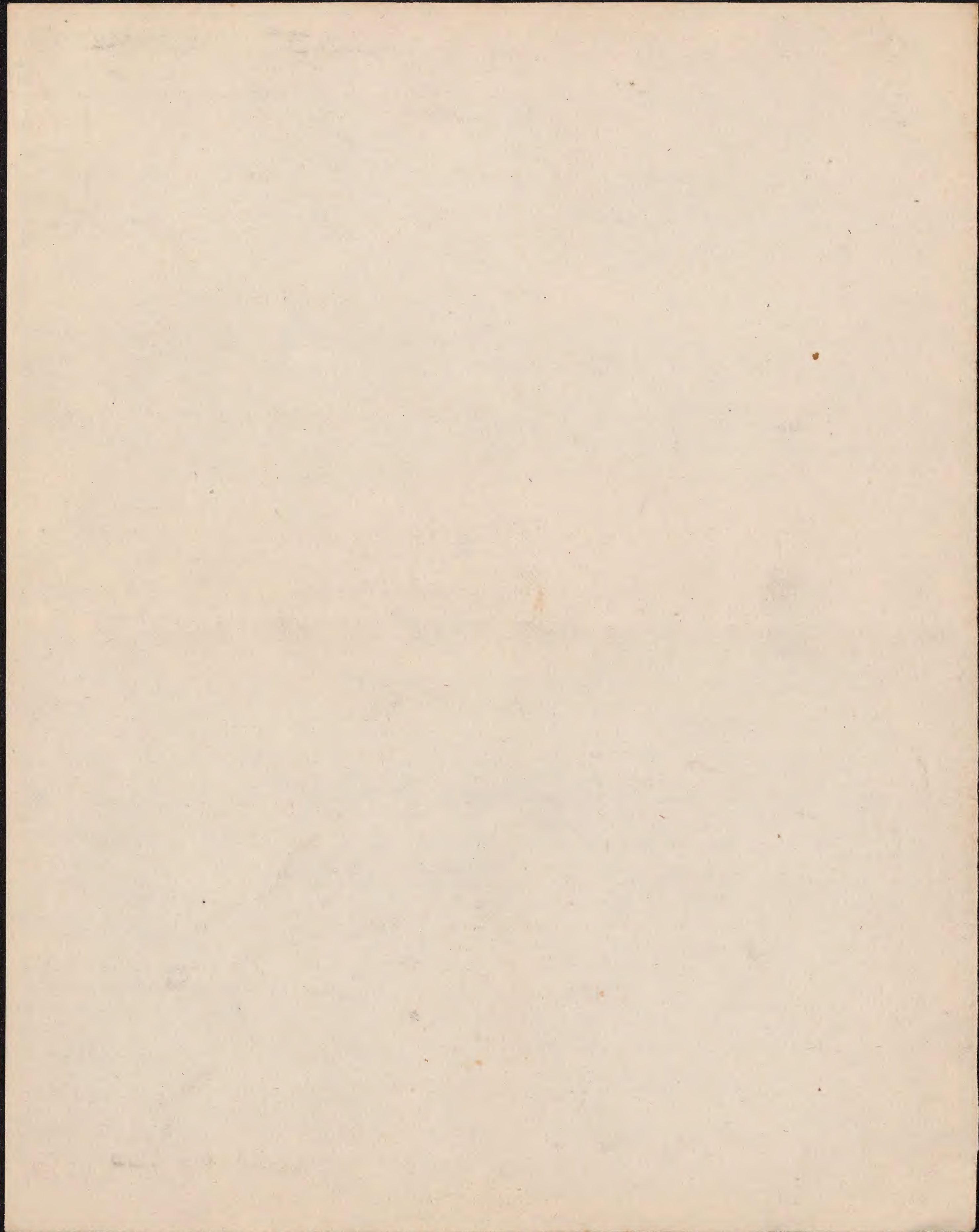
with life of every kind, to pursue his studies (9
in natural history. He was, also, highly social;
a member of two medical and medico-conviv-
ial societies, a ready and graceful poet, and
a skilful musician. Some of his epigrams would
have done credit to Pope or Swift; and his piece
on the "Signs of Rain" is often cited yet, in agricultural
papers and almanacs, as containing, in poetical form,
a more terse and vivid ~~description~~ of the results of close
observation in the country than any thing written since Virgil's
Georgics. John Hunter kept him engaged in sending
him specimens of all sorts, alive and dead, for his
experiments in London. Their letters are full of little
but hedgehogs, cuckoos, bats, toads, salmon, porpoises and
eels. Hunter tried to persuade him to join himself in
establishing a school of natural history and human &
comparative anatomy in London; but Jenner was not then
to be tempted from the country.

The most remarkable contribution made by
him to natural science was his observation and des-
cription of the peculiar and previously not understood habits

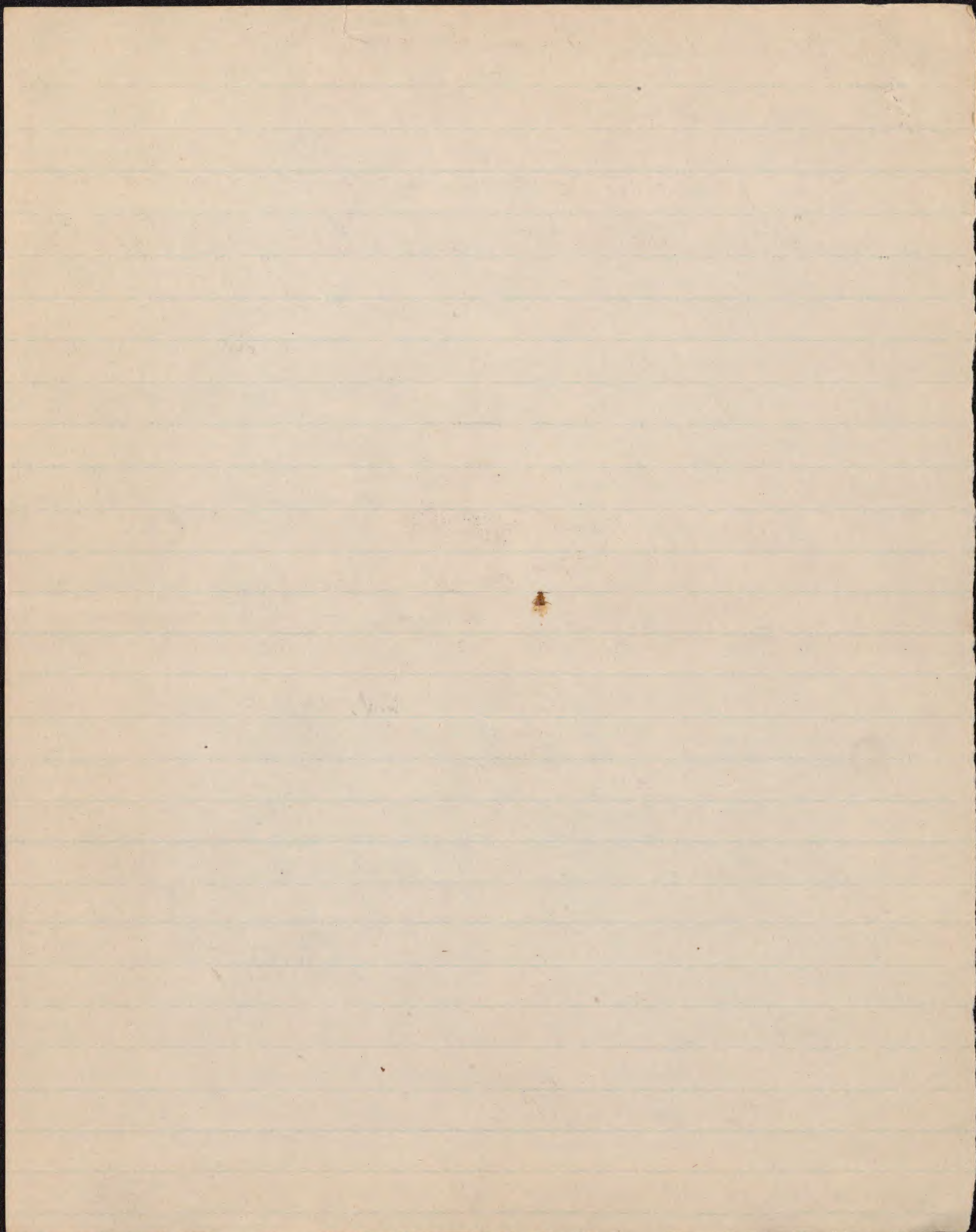


of the cuckoo. The female of the European species (10)
of this bird, unlike our own, is an ornithological
filibuster or usurper and destructive tyrant. It makes,
unless in rare exceptions, no nest of its own; but deposits
its eggs in other birds' nests, — as that of the hedge-
sparrow, or the lark. What is more strange is, that
the parent bird, whose nest is thus intruded upon,
takes good care of the foreign egg, and, when it is hatched,
of the young cuckoo. But, with a seemingly unnatural
ingratitude, this young bird, growing faster than the
native birds of the nest, and being stronger, ejects
the latter altogether, and retains possession. The paper
in which Dr Jenner, for the first time, gave full
account of these facts, was presented through John
Hunter to the Royal Society, and, in their Transactions,
attracted much attention. (By any means

But this was not ^{by any means} his only inquiry into such
subjects. He experimented, under Hunter's suggestions, into
the hibernation and reproduction of various animals;
noticed much concerning the ^{annual} migrations of birds; and
became well acquainted with the geological relations of
the rocks and fossils of his neighborhood. Besides all



this, his studies in morbid anatomy and pathology (11)
alone might have furnished reputation enough for
an ordinary man. He was the first to point out
ossification or other degenerative disease of the
coronary arteries as occurring in ~~in connection~~ connection
with angina pectoris. He observed, also, in
one case, in 1778, in consultation with another prac-
titioner, an appearance which, being described as a
firm fleshy tube, within the coronary artery but having no
connection with its walls, — we should now regard
as an instance of embolism. To one of the Medical So-
cieties to which he belonged he ~~was~~ communicated a paper,
afterwards lost without publication, containing observa-
tions upon "a disease of the heart which frequently comes
on during attacks of acute rheumatism, and leads to en-
largement and disorganization of the part." In spite of
claims of priority made on the part of others, it is prob-
-able that he was at least among the very first thus distinctly
to recognize the characters of rheumatic endo- (peri-
-carditis. We may remember that Jenner was a contem-
-porary of Corvisart and Laennec; — the immortal treatise of



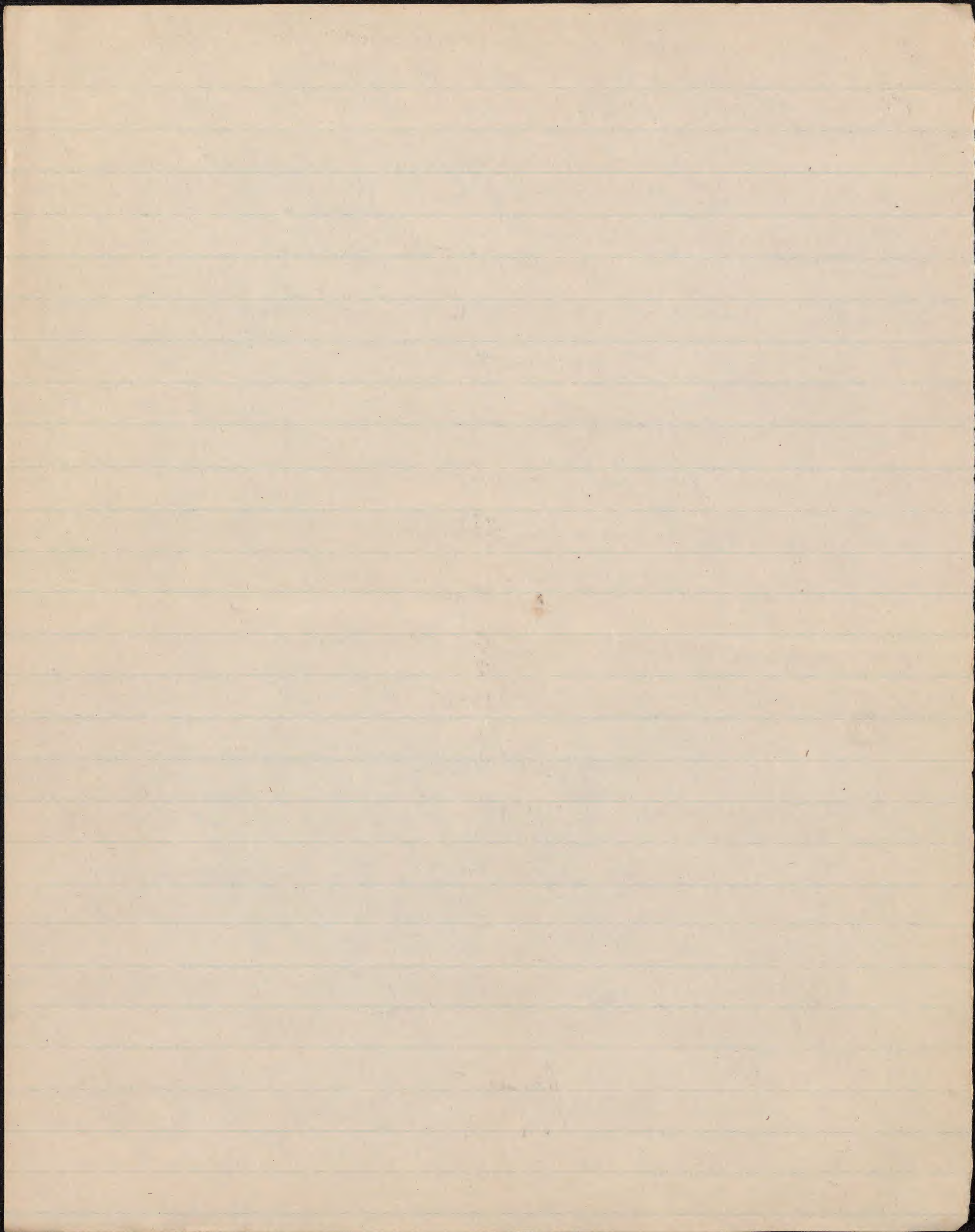
the latter having been published in 1819.

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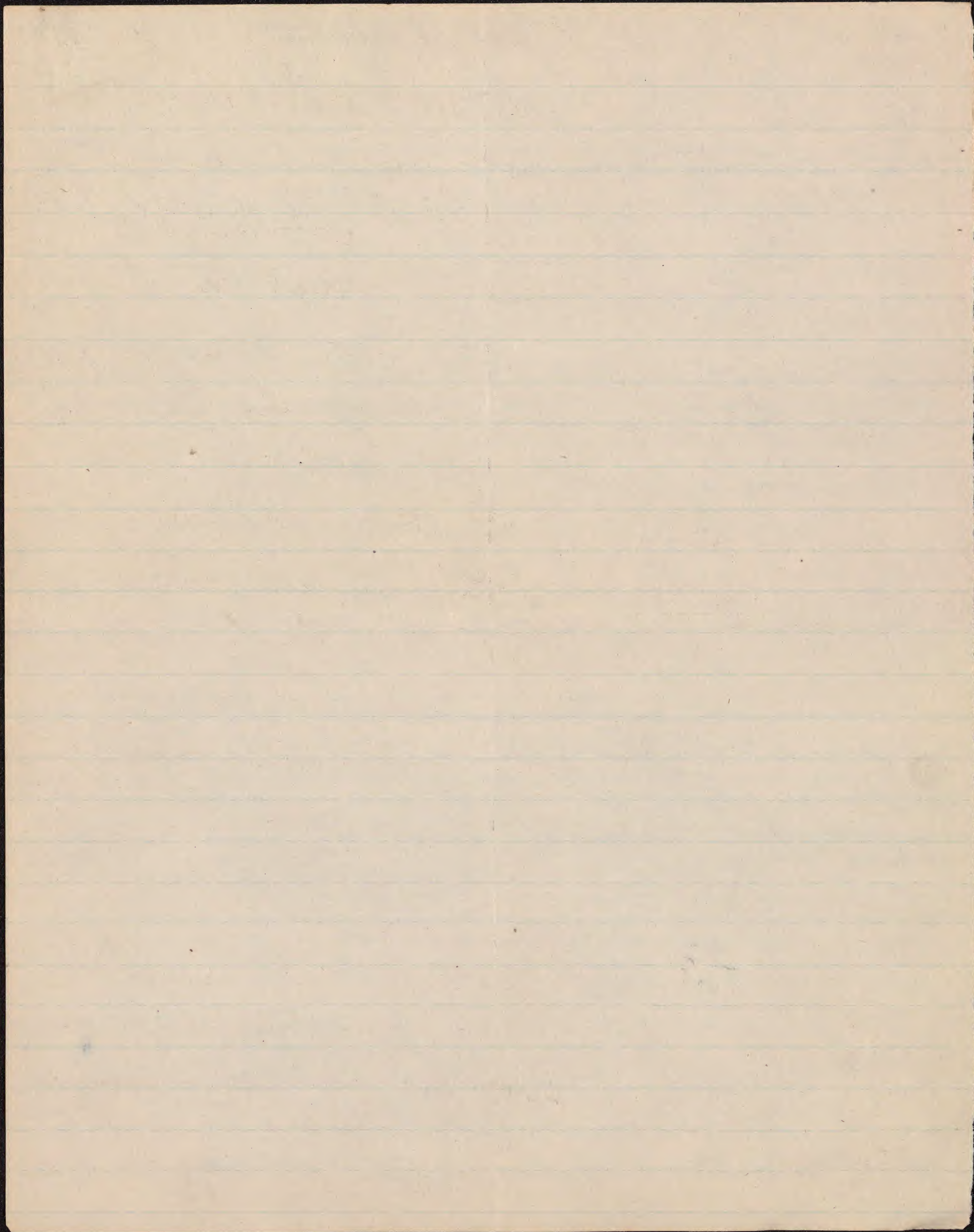
Jenner died in 1823.

He was associated ~~with~~ Hunter, in investigating the nature and history of hydatids, in other animals as well as in man. By his labors in connection with the study especially of ^{tubercular and other} degenerative formations and affections, Jenner contributed toward the gradual rectification, not completed until within the last ~~half~~ half or quarter of a century, of that once prevalent error, that all diseases, local at least if not general, are but modifications or degrees of inflammation. But all these were only ~~subordinate~~ or preparatory inquiries in comparison with the ~~only~~ great achievement of his life, the introduction of the practice of vaccination. To this, even though the history of it may be familiar to you all, I desire to invite a few moments of attention.

When Jenner was quite a youth, he was struck with ~~an~~ an occurrence in his preceptor's private office. A young Country-woman, conversing about



Small pox, said, - "I cannot take that disease, (13
for I have had cow-pox." It seems, from other
evidence, that such an opinion prevailed among the
dairies of Gloucestershire! On a tomb-stone at Yet-
minster, an inscription asserts that Benjamin Jesty, a
farmer, in 1774 (some say 1770) inoculated his wife and children
with the cow pox, to prevent their getting small-pox.
The same thing was related, after Jenner's introduction
of vaccination, of a Mrs Rendall; although without much
proof. When the Duchess of Cleveland was taunted by her
companions, Moll Davis (Lady Mary Davis) and others,
that she might soon have to deplore the loss of that
beauty which was her boast, ~~the~~ small-pox then
raging in London, she is said to have replied,
that she had no fear of it, for she had had
a disorder which would prevent her from ever having
the small pox. But all such knowledge
was, with ~~those~~ who had it, practically unproductive,
until Jenner took it up, with the intuition of genius
and the mastery and patience of ^{the} scientific mind. When
he went to London, in 1770, he talked about it to
Hunter and others. After his return and engagement in

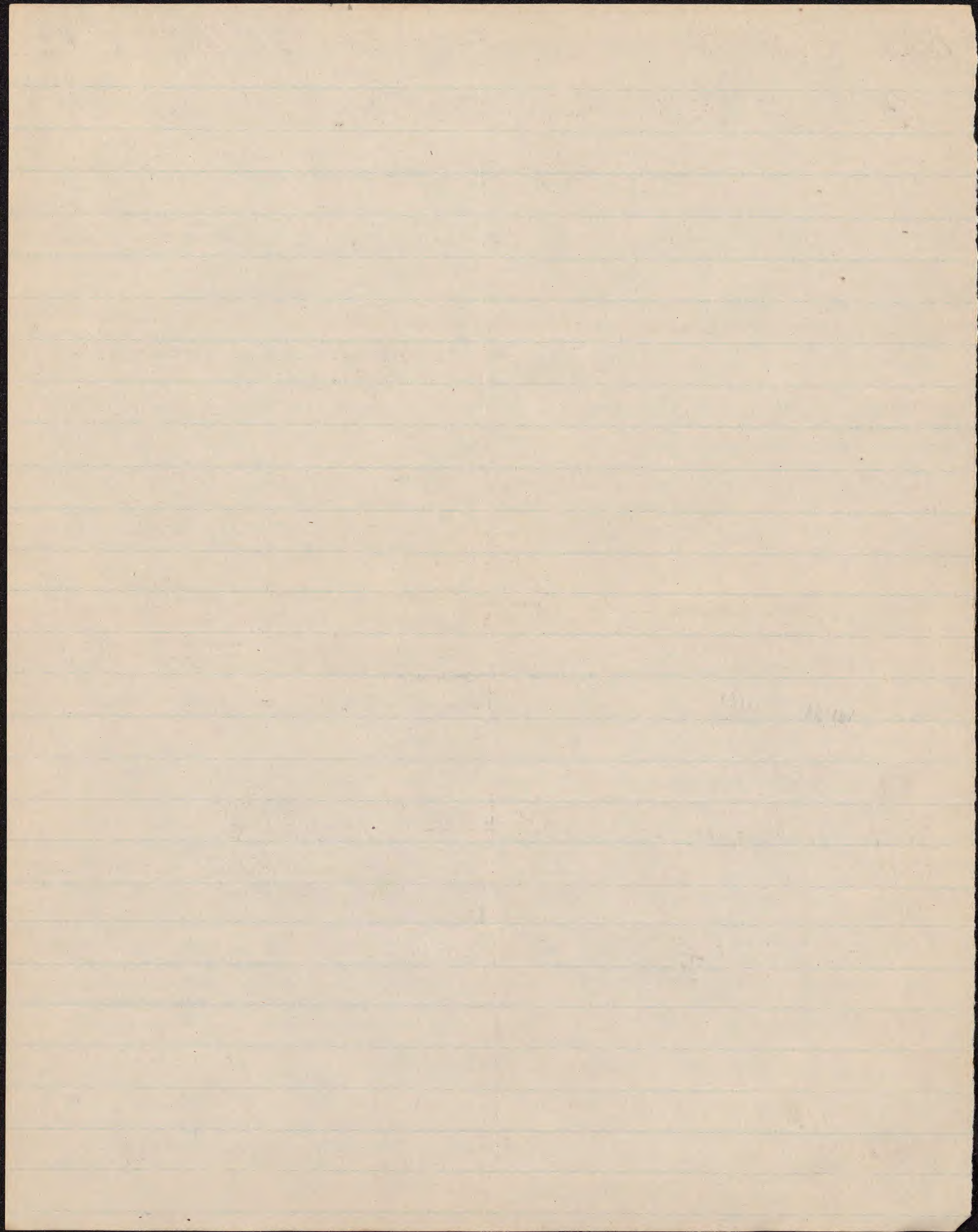


practice, he urged inquiry concerning it (14)
upon his medical friends. So persistent
was he in this, and yet, with them, so faintly,
that one of the Medical Societies to which
he belonged threatened to expel him if he
continued to harass them with so unprofitable
a subject. Beginning, however, his own obser-
-vations ^{and inquiries} in 1775, by 1780 he was able to per-
-ceive ^{the dawn} of the future greatness of his
achievements. His first experiment was with cow-
-pox; upon his own eldest son. Variolous inocula-
-tion subsequently took no effect ^{upon him,} confirming
Jenner's opinion that this, as well as cow-pox,
was identical in nature with small-pox. For other
experiments of various kinds, and close, exhaustive study of
the whole subject, a number of years were yet required.
In the first place, he found that what was commonly
called cow-pox did not always prevent small-pox. Instead
of being discouraged by this, he went on to ascertain, by
Patient scrutiny, that cows are subject to a variety of
spontaneous eruptions about the udder; that they all

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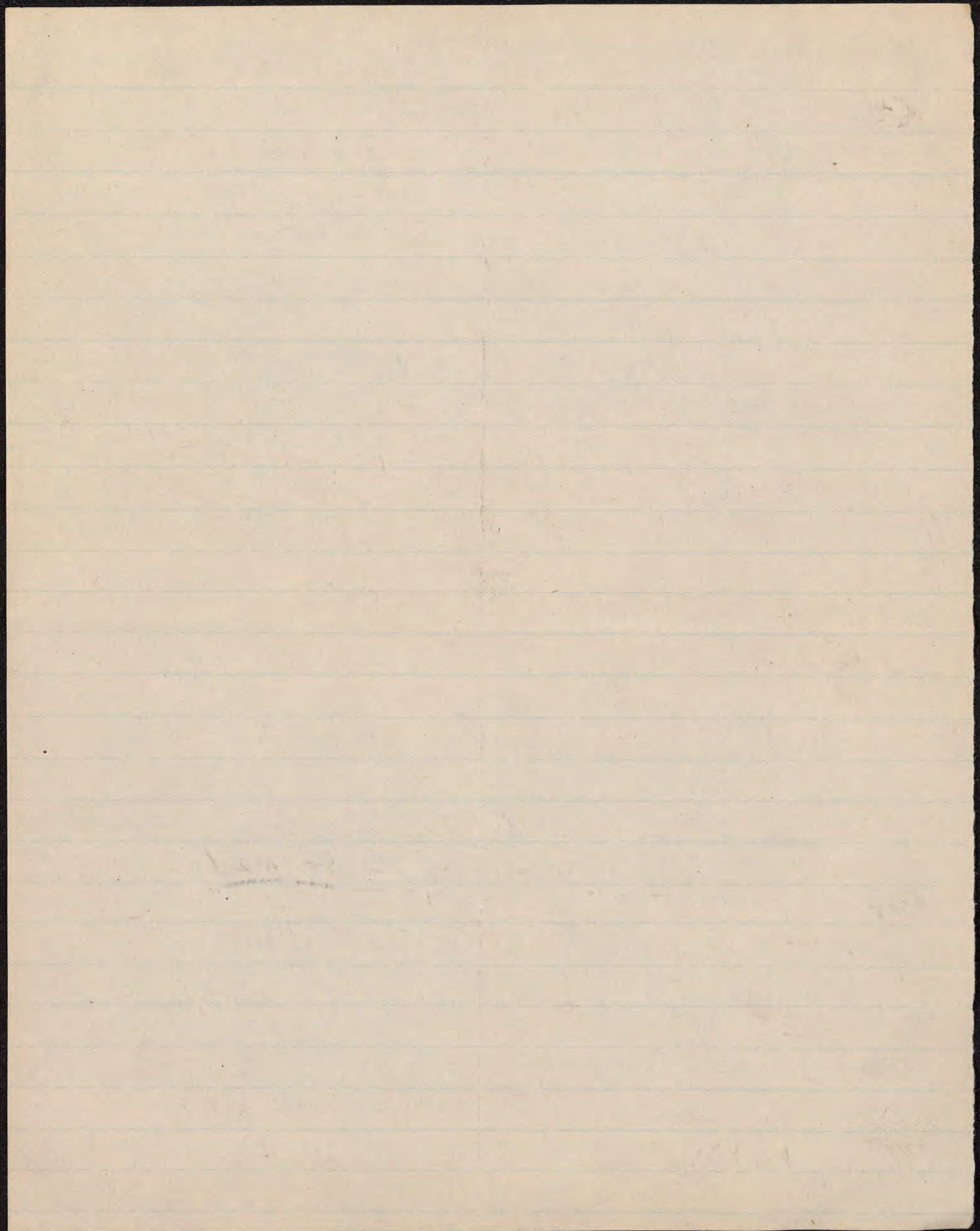
are capable of communicating sores to the hands
of the milkers; and that whatever sore was so
produced was called, in the dairies, Cow-pox.
He had to designate, therefore, a spurious and
valueless, as well as a true, protective cow-pox.
The latter he believed to be identical with the
smallpox of the human subject, and also with
the grease of the heels of the horse. This
^{last} opinion, which has not been largely insisted
upon by other writers, was confirmed by ~~unmistakable~~
facts, made known especially by Lox of York-
shire, ~~and Viborg of Denmark.~~ ^{and Viborg of Denmark.} It is probable, however,
that in the horse as well as in the cow, there
is more than one disease going by the same name. Dr
Valentin, of France, is asserted to have proved that the ass, sheep and goat are all suscep-
tible of vaccine ^{inoculation}.
Next, however, Dr Jenner found that, sometimes,
the genuine cow-pox could not be depended upon.
There was a difficulty that would have disheartened
most men. But, with that faith in an ascertained
principle which is ^{essentially} an element of the truly scient-
ific mind, this, also, only led him to repeat, vary,
and closely analyze ~~all~~ his observations. Thus
he found, finally, that it is only in a certain state of



the virus that it is capable of affording (16
Protection ~~with~~ from variola; while, even when
not possessed of this power, it may produce
a local affection of a somewhat peculiar and
yet spurious kind.

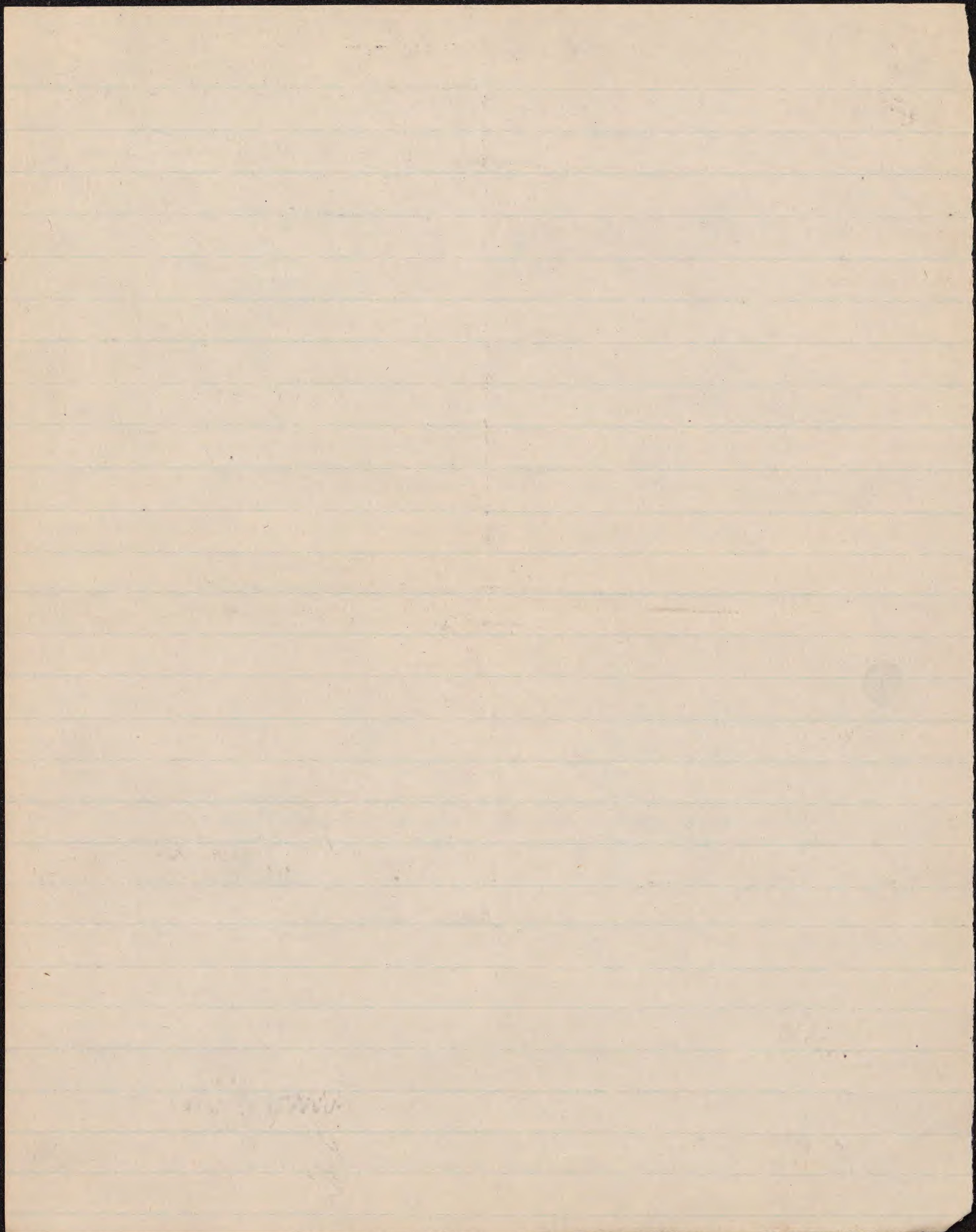
For actual, satisfactory trial with
it upon a human subject, he had yet to wait a good
while. Meantime, he conversed and corresponded
largely with distinguished medical men, in London
and elsewhere; Sir Everard Home, Cline, Haygarth
and others took more or less interest in ^{the matter,} ~~it~~ but
no one shared his enthusiasm, or, with any confidence,
his hopes.

On May 14th, 1796, however, ~~with~~ a day
~~was~~ celebrated ^{by a} publicly ^{distributed} medal in one of
the great capitals of Europe, ^{Berlin,} his ~~own~~ crucial exper-
iment was performed. He inoculated a boy of eight
years of age with cowpock matter. The eruption followed,
with the characters which he now so well knew. Then
~~came~~ ~~the~~ the critical test, of subsequent small-
pox inoculation. This, too was done; and a perfect



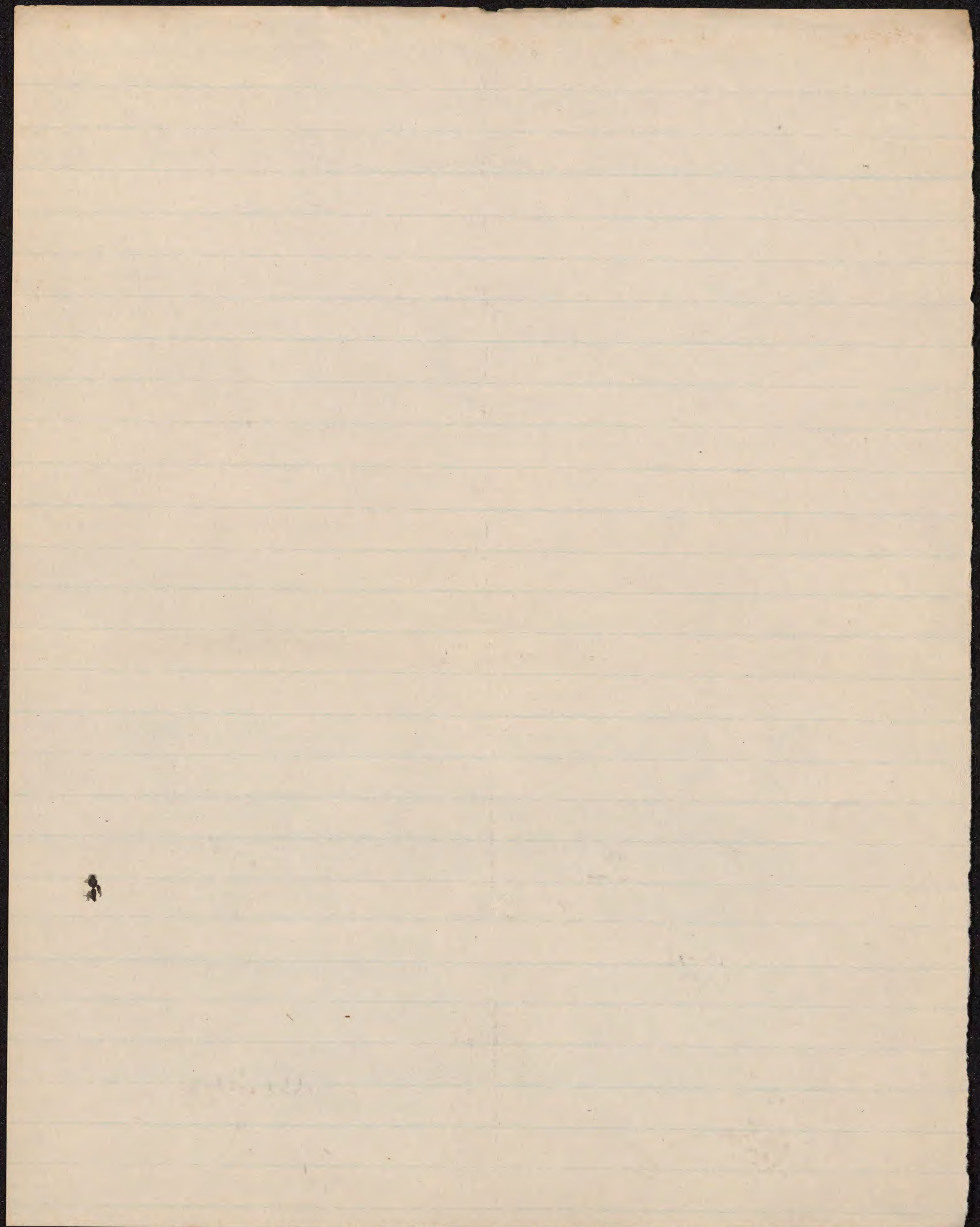
immunity was demonstrated. Were Jenner's (17
Labors now at an end? Might he not now rest
and wait for a glorious reputation to come to
him? On the contrary, - in the letter in which
he announced the full success of his first
vaccination to his most intimate friend, he
concludes with the words, "I shall now pursue
my experiments with redoubled ardour." Indeed,
by far the hardest part of his task was yet
left; - to convince the world of the value
of his discovery.

One might have thought, that to
make it known and appreciated by the mem-
bers of his own profession, ^{would} ~~not~~ not be very
difficult. Even there, however, obstacles met him.
His great work, the "Inquiry", was published in
1798. It contained an account of 23 cases of ^{the} vaccine
~~infection~~ affection, 16 of them ~~were~~ ~~by~~ taken by
contact with the cow, and the rest by inoculation with
the matter. Going to London in the year of the ^{first} issue,

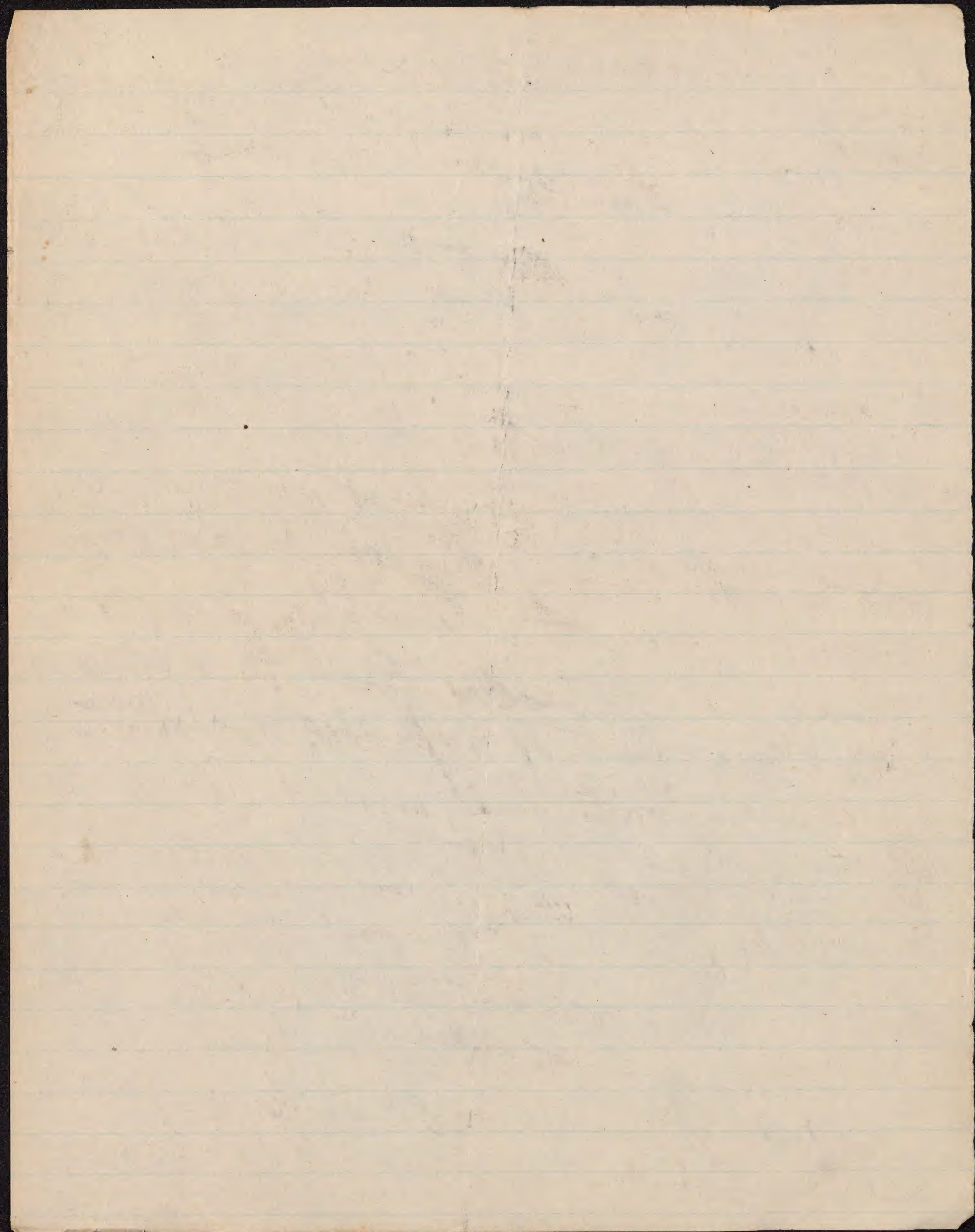


he was disappointed and mortified that, during a (18
stay in the city of 3 months, he was unable to find
a single individual willing to allow himself to be
vaccinated so as to exhibit the disease for the
instruction of the professor. Some virus which he took
to London with him was, nevertheless, consigned to Mr Cline,
who inoculated with it a child suffering with hip-dis-
ease; thinking that it might be remedial. An
eruption followed, and the child was afterwards in-
oculated with small pox matter without effect.
But Mr Cline did not succeed in using the same
virus with other Patients; and Jenner was at that
time unable to procure fresh matter in the country
near him. At one period of his investigations the cow-
pox seemed to disappear entirely from Gloucestershire;
while in Cheshire, also a dairy county, it was not
known; though discovered a little later in 18 ^{of the} Counties of
England, as well as in many other countries of both hemis-
pheres.

It may interest those, if there
be ~~any~~ such, to whom the subject ^{in its historical aspect,} is comparatively
new, for me to say, that inoculation with smallpox

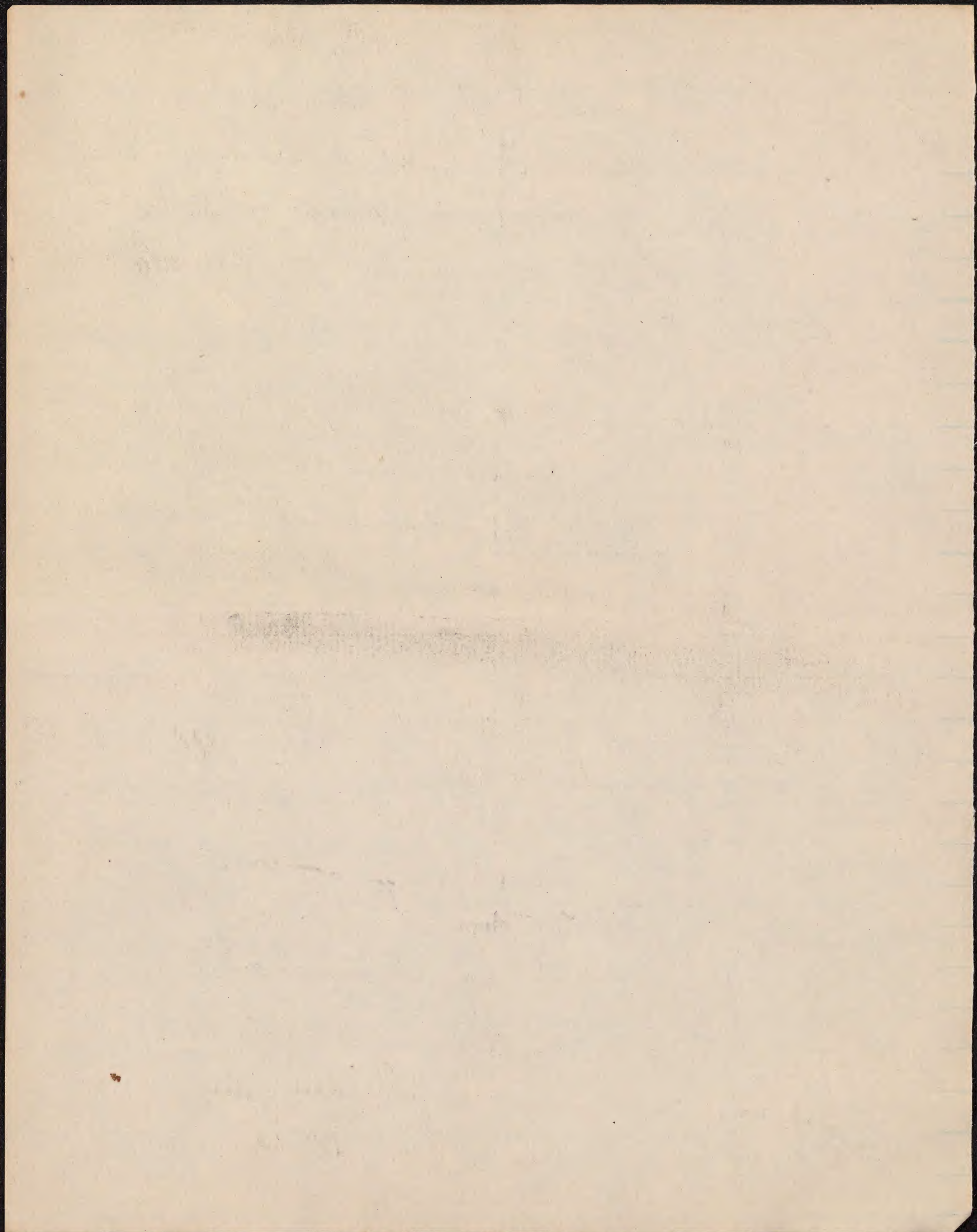


Matter for the benefit to the individual of greater (19)
mildness in the attack than when taken in the usual
way, was first advocated in England by
Timoni of Constantinople, in 1714, and in Venice by
Pylarini; but ~~was~~ was fairly introduced from the
East by Lady Mary Wortley Montague, in 1718.
That the total amount and consequent mortality
of small pox was increased by the practice
of inoculation, the disease when so produced being as
contagious as when spontaneous, seems to be beyond
doubt. Without Jenner's discovery to replace it,
it is probable that inoculation would ~~have~~ have
been given up. Of those actually inoculated, about
1 in ³⁰⁰ ~~50~~ died. ~~From~~ Natural small pox, from 1 to 2
or 3, to 1 in 7 or 8; ~~and~~ and nearly all who survived
were disfigured ^{often, beautifully,} by the effects of the eruption. So great were
the fluctuations of opinion ~~and~~ concerning inoculation,
that while in 1754 the London College of Physicians
declared the fullest approbation of it, in 1763 it was
prohibited in France by Royal authority.



We have seen that Jenner's first successful vaccination from one human being to another was performed in 1796. Through Dr Waterhouse of Cambridge, Massachusetts, it was introduced into America in 1799; by De Barros of Vienna, into Austria, in the same year; into France and Spain, in 1800; Italy, Russia, Denmark and Sweden, in 1801; India, ~~the East~~ returning ~~with~~ ^{to the East} ~~with~~ ^{usurious} more than interest ~~the~~ ^{President} gift of inoculation, in 1802.

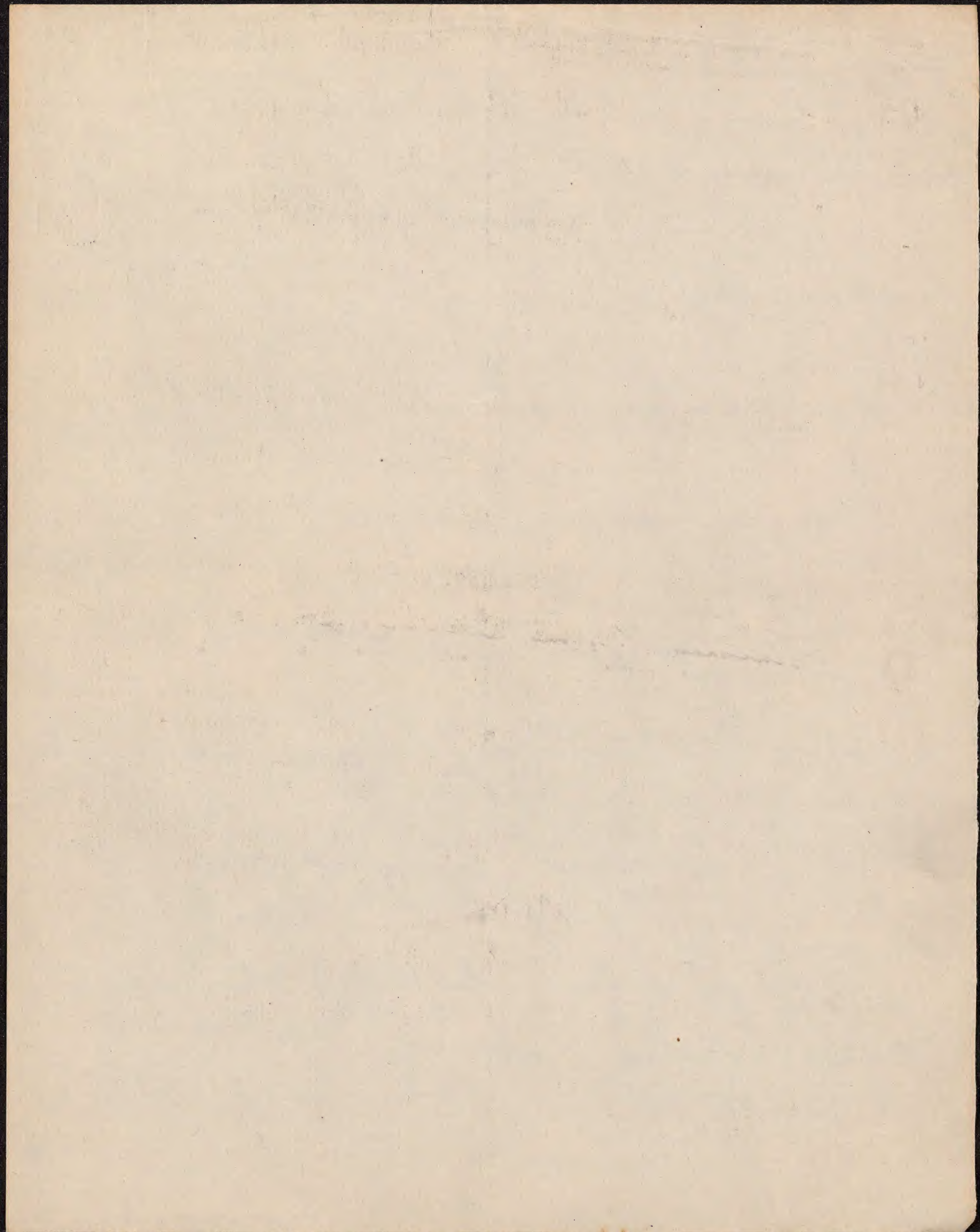
In the United States, Thomas Jefferson took a strong interest in the promulgation of vaccination; so did John Adams and John Quincy Adams and other leading men. But the profession was not altogether prompt in adopting it. In 1801, Dr Waterhouse wrote that he had given the virus in vain to most of the principal physicians of Boston and its vicinity; and that not a single case of vaccination had yet occurred in Philadelphia. In our city, he was told that "the leading physician", whose name is not ~~known~~



given, ~~the~~ "thought it too beastly and indelicate (21
for polished Society!" In the very next year, how-
ever, we are told that Dr Rush of this City had
come out full and strong in praise of the practice,
and had published an eloquent lecture ~~upon~~
~~the~~ ~~discovery~~ discovery.

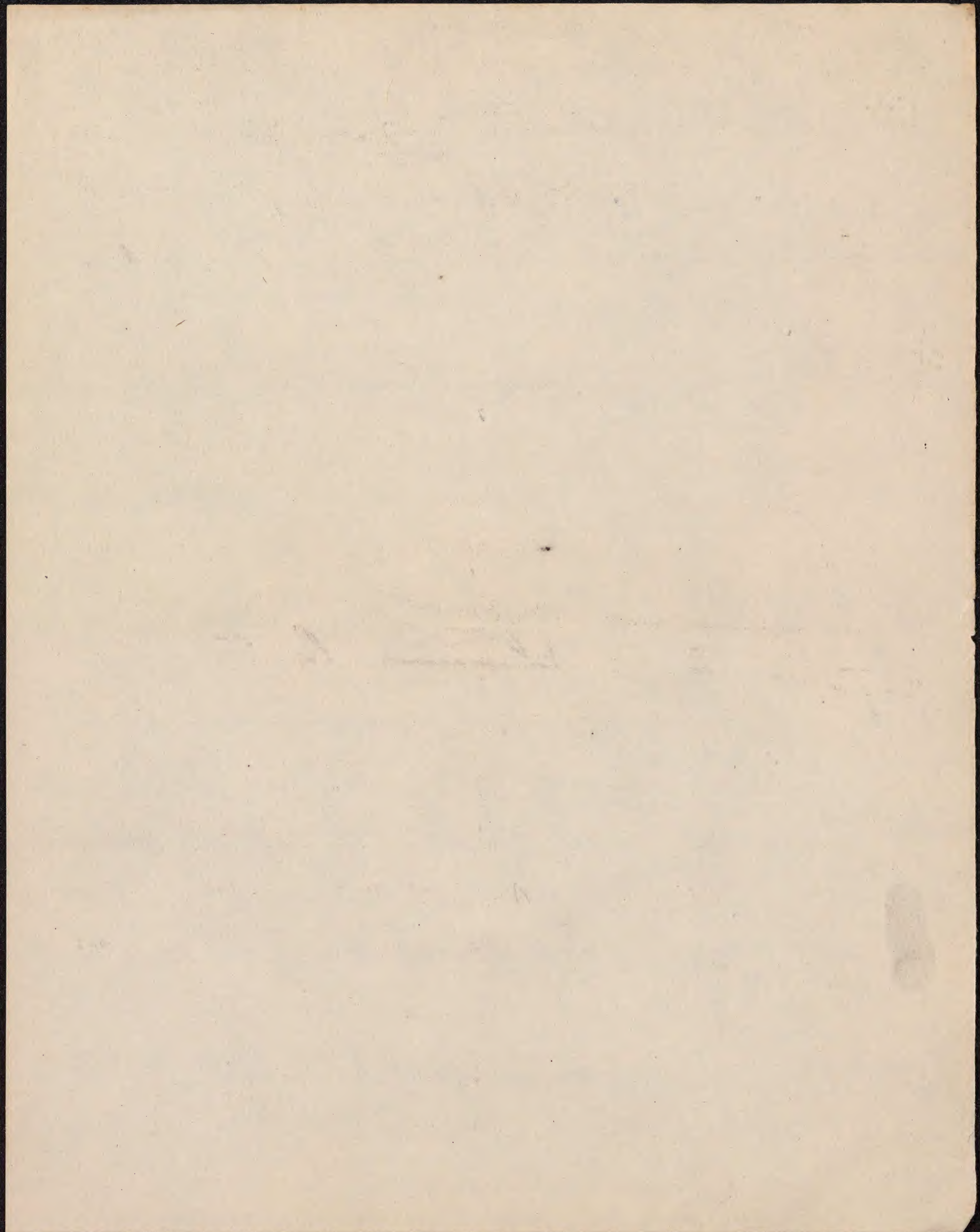
Honors and attentions now began to
besiege ^{with correspondence, and} him. He was made member
Jurer in upon Jenner. ^{regularly} of all the Learned Societies of Europe,
or associate of all the Learned Societies of Europe,
and of the American Academy of Arts and Sciences.
~~He was also made member of the Royal Society of London.~~

The Empress dowager of Russia sent him an autograph
letter and a diamond ring. In 1802, after a scrutiny-
ously careful inquiry into the merits of the case, Parlia-
ment voted him an honorarium of £10,000; which many
thought to be much too small a sum; as he had
given up practice and spent a great deal in
establishing vaccination. Later, an additional grant of
£20,000 was accorded. In the same year, 1802,
the Royal Jennerian Institution was founded,
with the King and Queen of England as patron and patroness,



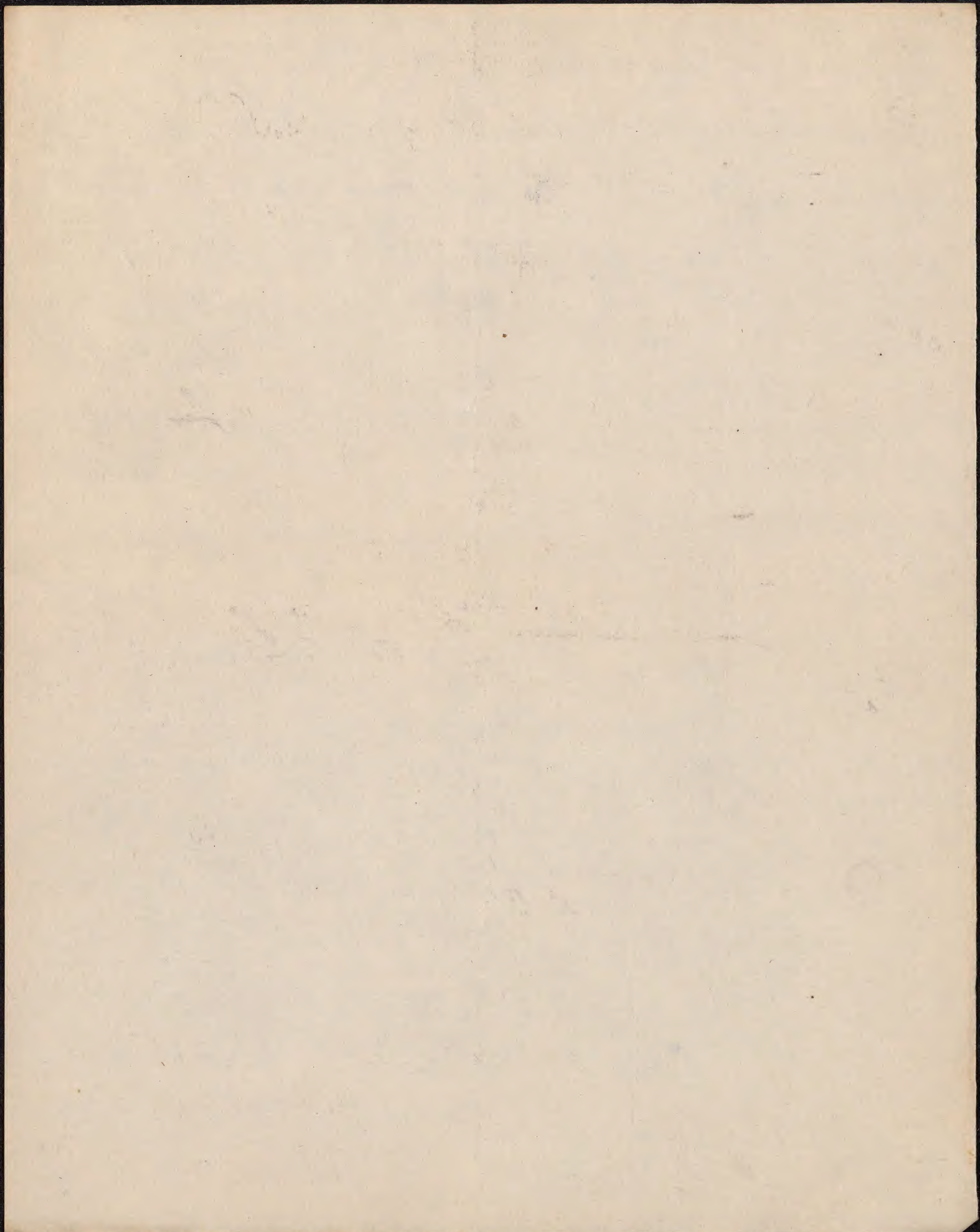
the Prince of Wales and 3 Royal Dukes (22)
vice-patrons, and the Duke of Bedford President;
with any number of noblemen as vice-presidents. The
Spanish Government fitted out an expedition to convey vaccination to
all the distant colonies ^{processions} of Spain.*
Sailing yet with Jenner. He had bitter open
enemies, and treacherous friends. Some of the
former ~~at~~ denounced the new practice, as
tending to convert human beings into beasts. Procu-
lation had already been condemned publicly by one
of the clergy, as no new art, because Job had
been inoculated by the Devil. Shermann of Frank-
fort went farther, and tried to prove by the
Scriptures and the fathers of the Church, that
vaccine was nothing less than Antichrist. More
plausible than these were the efforts of those
who endeavored to deprive Jenner of his due
credit by asserting other previous discoverers of
vaccination. Such were named as existing both in

* It had on board, under charge of Dr Balmis, Surgeon ex-
traordinary to the King, 22 children, who had never had small-
pox, selected for the preservation of the vaccine fluid, by transmitting
it from one to another during the voyage.



England and France, — and an interpolation ^(Pearson) ^(Rabaut of Montpellier) 23
was actually made in ^a copy of ~~an~~ ^{an} old
Brahminical writings, to make it appear that
the practice had been known in ancient
India!

But, some of the seeming friends of
vaccination gave Jenner rather the ~~greatest~~ ^{greatest} trouble.
They adopted ~~it~~ ^{it} without taking pains to inform
themselves of all the facts and precautions essential
to it. Matter was sent out, in large amounts, by
two well known physicians, from the small-
pox hospital of London, — in which actually the
virus of variola was mingled with, and sometimes
substituted for, that of the vaccine affection. It was
no wonder that one medical man wrote to Jenner
that his patients got the vaccine in the con-
fluent way! It required incessant attention, and vast
patience and labor, from Dr Jenner, to prevent such
~~practical~~ ^{practical} mistakes from ruining the credit of his
discovery at the ^{very} start. Never did any fact



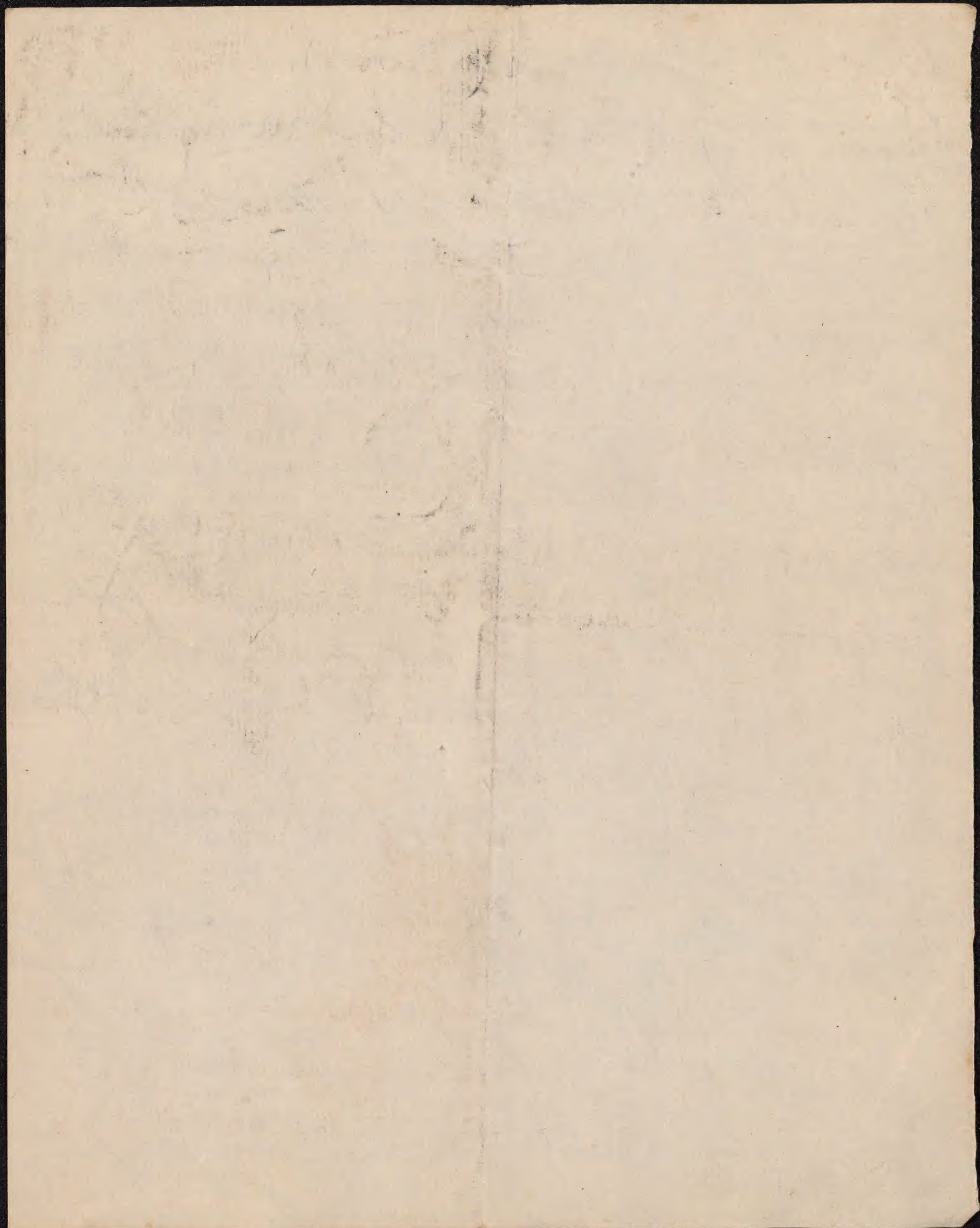
asserted in inductive science pass (24)
through a more searching or ~~ideal~~^{of} ~~inquisition~~^{inquisition},
in every way, than this.

And are we ~~to~~ to be told, to-day, - that
it is all a delusion? Have Jenner's labors, and
his wonderful genius, existed, after all, but in vain?
Two ~~Medical Men~~ in New York, one of them a surgeon
of considerable reputation, (in 1869) ~~Last year~~ addressed
a letter to the Board of Health, protesting against
Compulsory vaccination. And a Magazine of a
Popular character, called Good Health, ^{contd}
edited by a number of respectable Physicians ^{of this country,}
contained, ^{in 1869 or 70} some months since, an article by Dr
Booth, of Boston, in which it is said that all
the Scientific men of Europe are now opposed
to vaccination; and that the diminution of small
pox, which is admitted, must be ascribed to
a spontaneous change in the human constitu-
tion and better observance of the Laws of health!
An anti-Vaccination League has been ^{started in England, including, I believe,}
^{even} some members of the medical profession.

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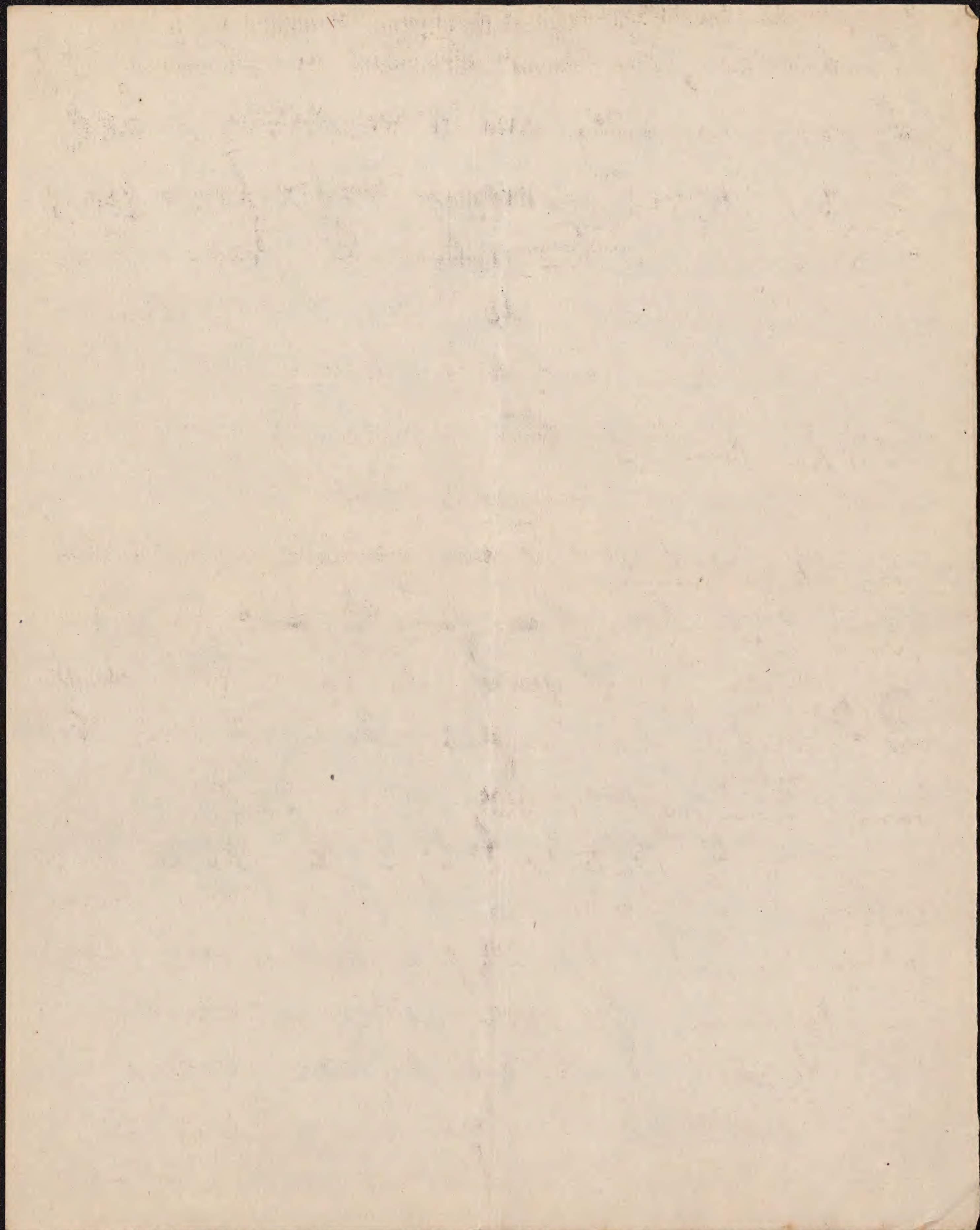
(25)

I must not, (gentlemen), in this
(introductory) Lecture, detain you with the
Discussion of this ^{whole} question, important as it
is. Let me just say that I believe these
last assertions to be altogether untrue. The ablest
Scientific men, of the Medical profession, who alone
are competent to judge, both in Europe and
America, retain their confidence in the value of
vaccination. Dr. Limes of New York, a man
of the largest experience bearing upon the
subject, a first class authority upon it, has ~~shown~~
abundantly shown, that vaccination from arm to
arm, according to Jenner's rules, best done
with 8th day lymph, is ^{as} reliable ^{as an attack of} as smallpox
itself to give immunity from that disease; that
the danger of syphilitic inoculation in this way
is absolutely null, with that care which every
respectable physician may and always does
take; and that to substitute bovine vaccination,
directly from the cow, as a general rule, for



the use of the virus taken from healthy (26)
human subjects, is to substitute uncertainty
for certainty, without any corresponding ad-
vantage; however suitable it may be, now and then,
to introduce good fresh cowpox matter into
use for renewal of its strength. I believe
that, with proper care and skill, it may pass
through many human systems without any
loss whatever of its prophylactic power; and
that, with revaccination to secure its full
effects, we might trample out small-pox, every-
where, if only we could vaccinate every child that
is born into the world.

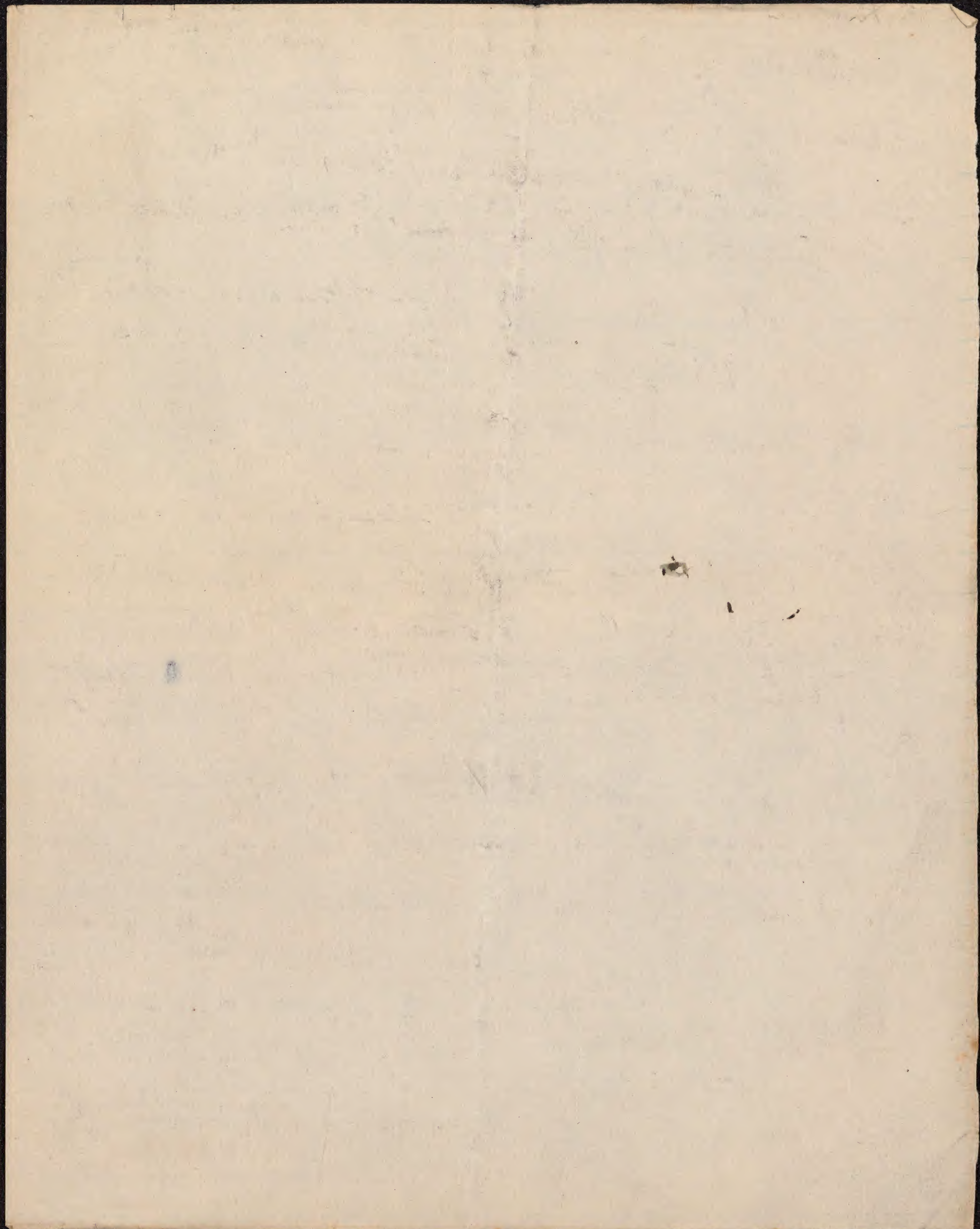
Pardon me for troubling you here
with a very few figures; some of which have
been lost sight of, as they are as old as the time
of Jenner. Before that period, it was estimated
that 1 in 14 of all born in Europe died of the
small-pox. In Russia, the imperial physician
stated that every 7th child born died of that



2 millions have been destroyed by it, in the Russian Empire, in a single year.
Disease. In Great Britain and Ireland, (27

45000 annually was its mortality; in all Europe, 210,000^{was} an average number for a year; in the world altogether, about 600,000. Now, what did vaccination do? Let us take a few examples.

Vienna and Milan formerly had even more deaths from smallpox than London. But, in 1812, about 10 years after vaccination had been introduced upon the Continent, it was officially reported that Vienna had been free from the pest for 5 years, and Milan for 8 years. So far as this exemption^{may} have been less complete since, it is doubtless owing, there as elsewhere, not to the failure of vaccination to protect, but to its failing, through neglect, to be performed. In Ceylon, where once the very appearance of smallpox caused whole villages to be abandoned, from 1802 vigilant superintendence secured through vaccination, and by 1808 variola was entirely extirpated from the island. So it was with Sweden and Denmark; which became freed from it, and



continued so for nearly 20 years. Now (28
absurd it is to talk of this being due to a
change in the human constitution, or to better knowledge
of the laws of health, is shown by the constant re-
turn of the same scourge, wherever vaccination
is neglected; by the wide destructiveness of cholera
in the same localities over and over again since
1832; and by the destruction, (within ¹⁸⁷⁰ ~~this~~ very
year) of the Indians of Montana in our
West, ^{by smallpox,} 500 out of a thousand in a few months.
Whole tribes of savages have thus been swept
from the face of the earth by smallpox.
The French Minister of the Interior, in 1811, gave it as
his opinion that vaccination had already been
shown to save 150,000 lives annually to the
empire. Take, again, on a smaller scale, the instances
of particular institutions. The British Royal Military
Asylum for the children of soldiers, containing more than
1100 children, with enforced vaccination, lost, from
1803 to 1811, only one child from smallpox - this

5

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One having escaped being vaccinated by ⁽²⁹
mistaken ^{causing it to be supposed} information, that it had been done.

So, also, it was with the ^{London Foundling Hospital, the} Polytechnic School and the
different Colleges of Paris, and like institutions. It
is very satisfactory to confirm these by much more
recent evidences of a similar kind. In a book
published ^{in 1869} ~~last year~~, Dr Cameron, Health Offi-
cer of the City of Dublin, states that, while
Ireland had formerly lost nearly 6000 lives
in ten years by small pox, in 1868 there was
not a single case in the island. Dr Austie, in
the London Practitioner, within a few months
^{of the date of the same publication,} ~~has~~ mentioned nearly the same state of
things as existing in Scotland, — and all from
thorough vaccination. Neither of those countries,
^{and} especially ^{not} Ireland, can possibly be supposed
to owe such an immunity to favorable circum-
stances among the population, or to special observance
of the laws of health.

Of Vaccinations in the Württemberg army, over
1/4 thousand men —

For each 1000 —

Perfect success —	340
Moderate success —	260
No success —	400

In five years after, though exposed to 5 different
importations of small pox, among all these soldiers
then occurred but one case of varioloid.

May not so-called "unsuccessful" vaccina-
tions still affect the system? I think so. { R. Taylor's case }

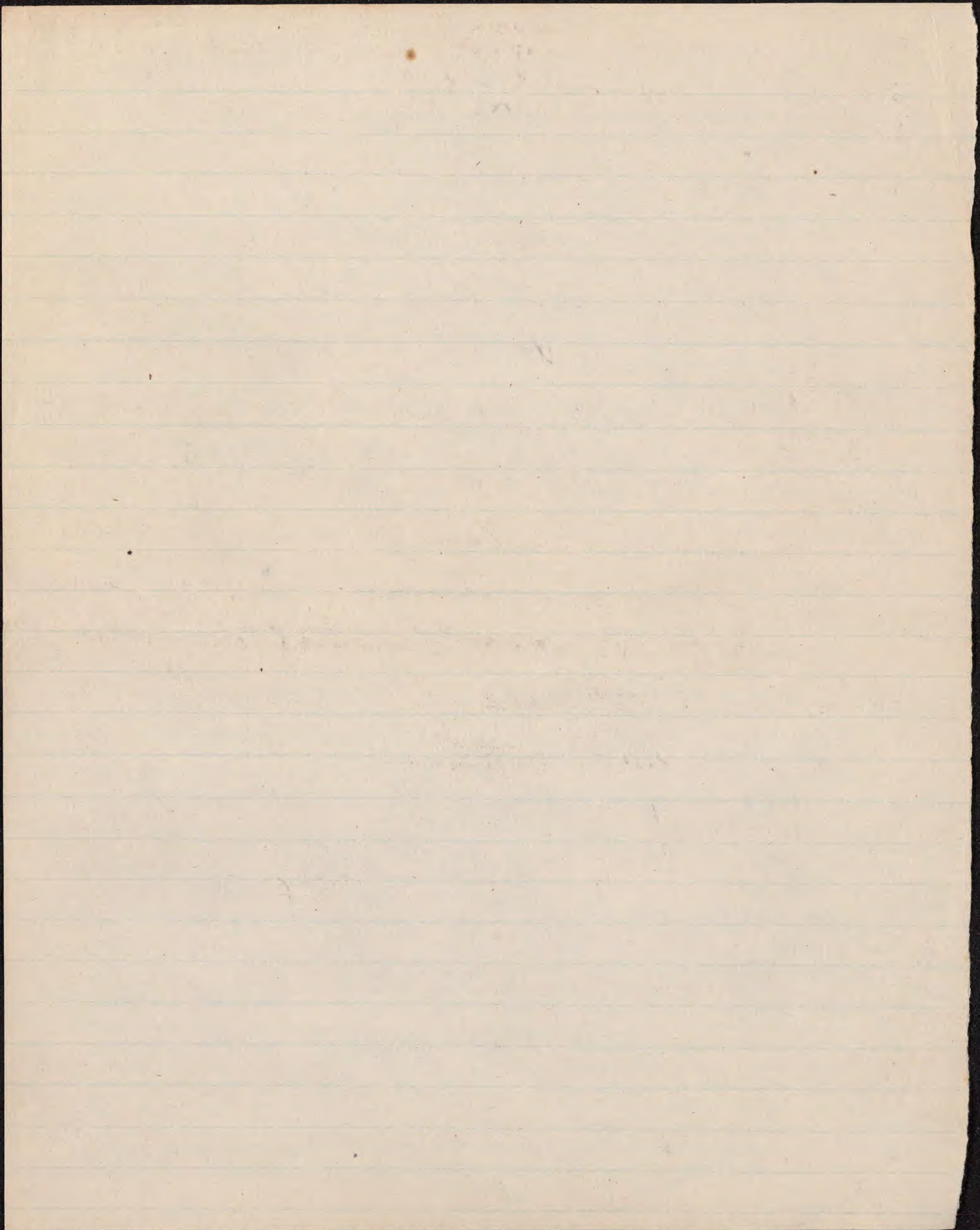
1. History of Vaccination
2. What is Vacc.?
3. Theory of its action.
4. The operation.
5. Course of Vaccinia.
6. Bovine vacc.

1. Original
2. rhovacc
3. variolous

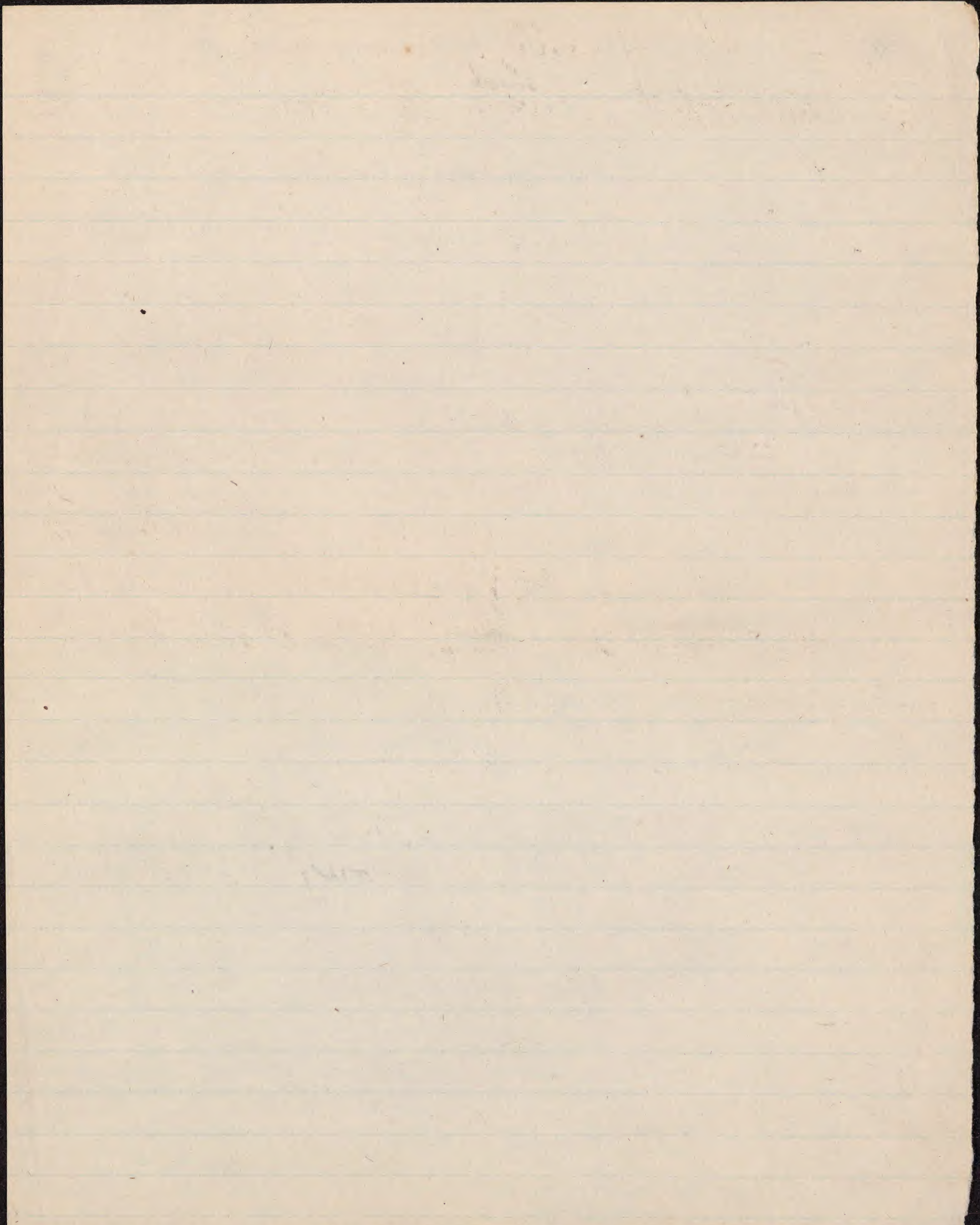
7. Vaccinal syphilis, &c.
8. Revaccination.

9 failures, —
yet varioloid
afterwards.

I have ^{carried} ~~that~~ you, thus, gentlemen, (30)
over a somewhat long, and it may be, wearisome
account of a very familiar character and
~~the~~ discovery: why was it? It was my wish
to illustrate, by ~~this~~ great example, what
science, ^{what} the trained, cautious, observant, experi-
-mental and reflective scientific mind, may do
for medicine. Has every thing been now done
that may ever be accomplished? Are ~~there~~ ^{to be} no
more discoveries, no more triumphs? I do not be-
lieve it. Medicine abounds in problems, as truly
as California ^{does} in rocks and sands of gold.
What is wanting is, the fitted minds and hands
for working in ~~these~~ mines; the metal is there, surely,
~~for the working~~ to reward the worker. And again I
urge, that the kind of training most useful, in prepa-
-ration ~~is~~ not only for medical discovery, but for
medical thought, observation and practice, is the
naturalistic training. Have we not abundant illus-

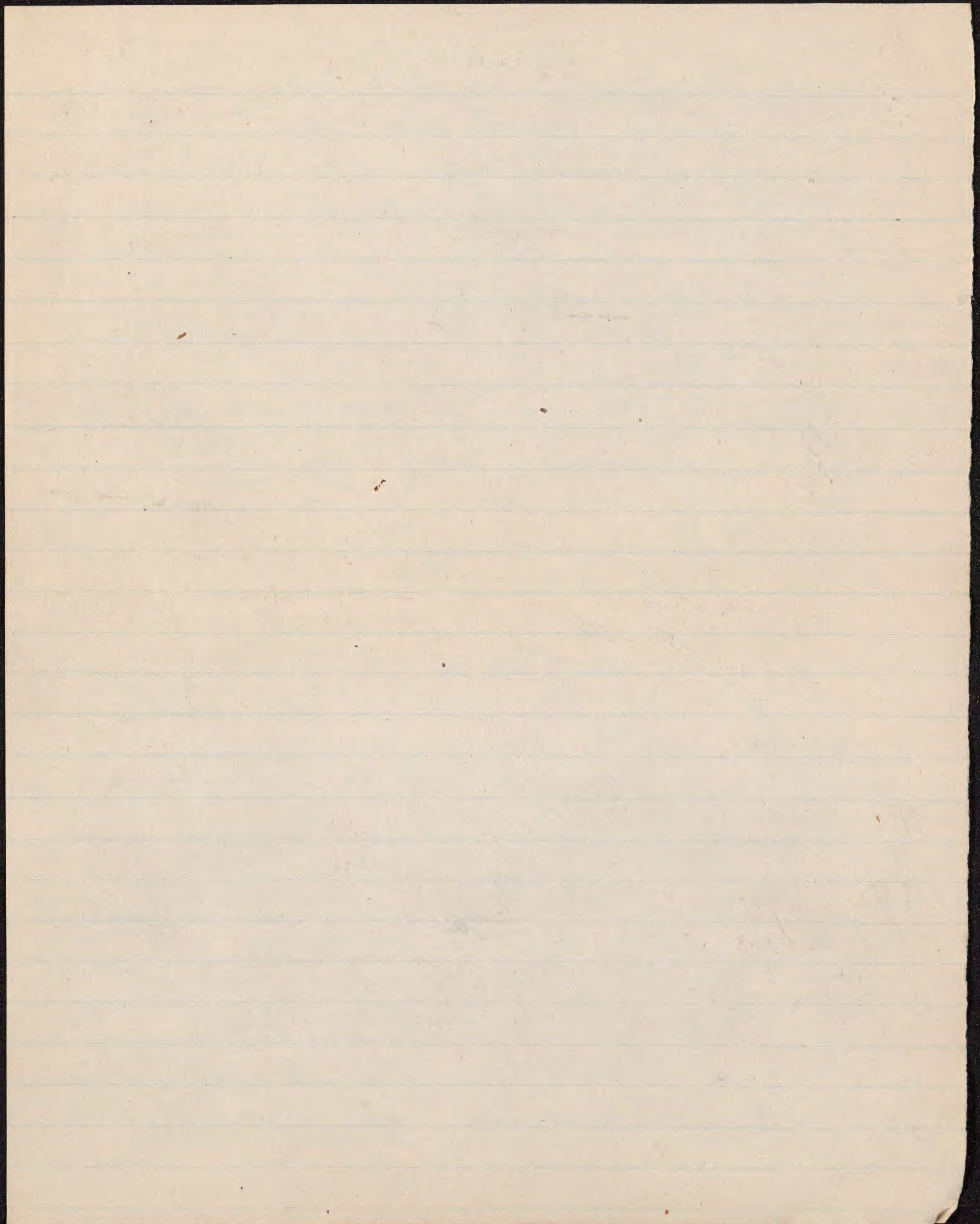


trations, in medical and scientific biography and (31)
history, of the closely kindred nature of
these two pursuits, of medicine and
natural science? Not to speak again of
John Hunter, or of Larrey of France, surgeon
and ~~historian~~ naturalist, here in Philadelphia
none should ever forget Godman, the naturalist-
physician, - nor Samuel George Morton,
whose superiors in either department ^{of science or practice,} were hardly to
be found at home or abroad. Science has
^{even} owed some of its own most beautiful discoveries to
Physicians. Who ~~therefore~~ first distinctly announced
the now universally ~~accepted~~ accepted doctrine
of the sexes of flowering plants? It was Camerar-
ius, a physician of Tübingen in ^{Württemberg} ~~Germany~~. Who, before
either Hales, himself a physician, or De Candolle, made
clear the fact of the circulation of the Sap in plants?
Claude Perrault, physician, architect and naturalist.
So, also, the truly animal nature of the Coral-builders
was first made out by Peyssonnel, a ~~French~~ phys-
ician, against the ~~assertion~~ contradiction of the French Acad.



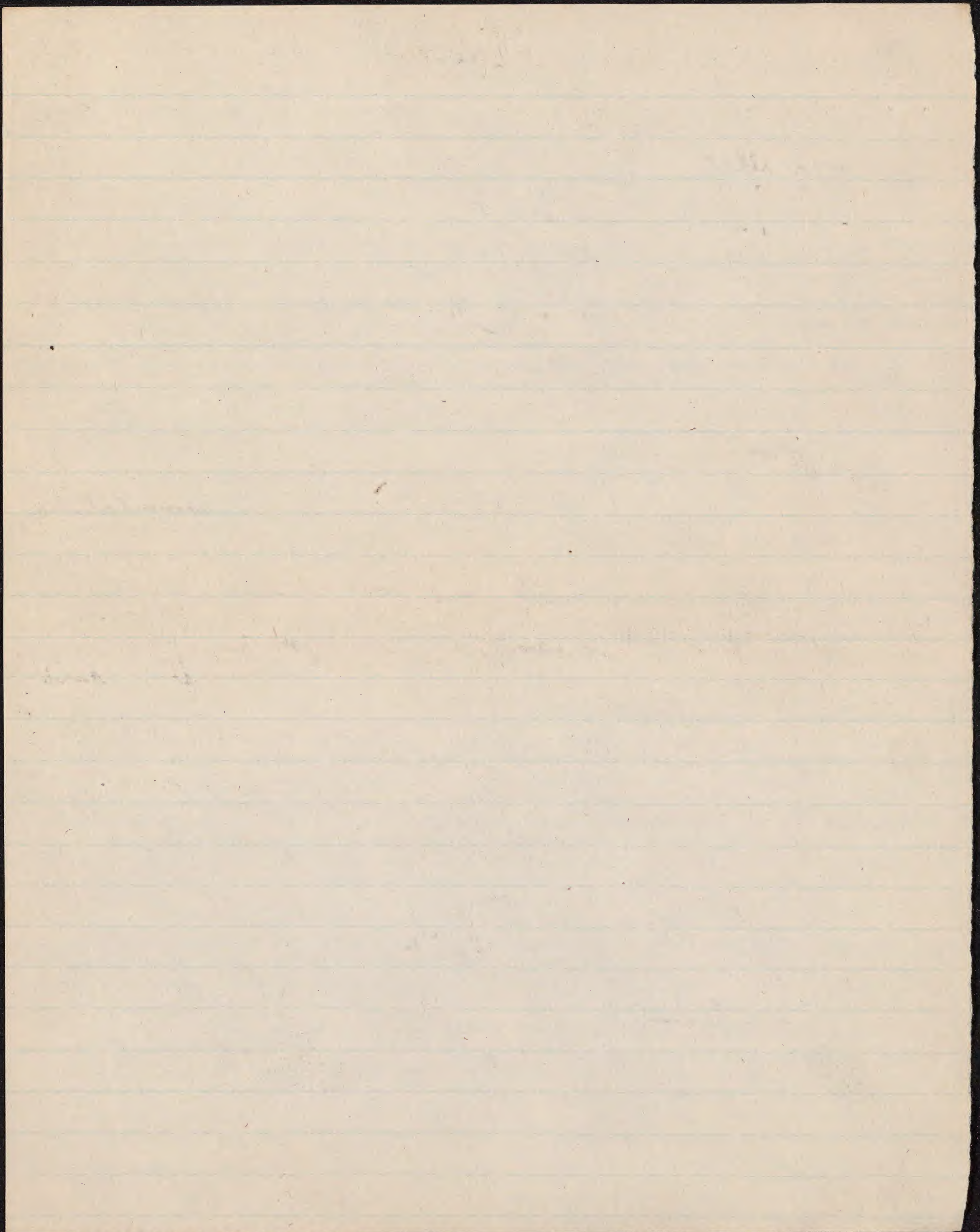
-any, and, more than all, of Barnard de Jussieu, (32
who ~~at that time~~ maintained that they were plants.

Perhaps it may be asked, then, what is
our ideal of the right kind of training and
preparation for ^{really} ~~an~~ educated physician. Ought
we, in this late day, to demand a standard lower
than that of Hippocrates? If five years were
not ~~too~~ too much then, can less be entirely enough
now? But it is not a question merely ~~of quantity~~
of time, or of quantity; it cannot be so measured.
Admitting ^{also} that some things very desirable are
not altogether possible; still, it is well and
useful to know what is most desirable. Under
this view, it may be now said, that a course
of study preparatory for medical scholarship and
professional practice ought to be progressive. It
should have, at its foundation, a broad and strong
basement of natural knowledge. In this ought to be
included the elements at least of physics and mechan-
ics and general chemistry. On these should be built

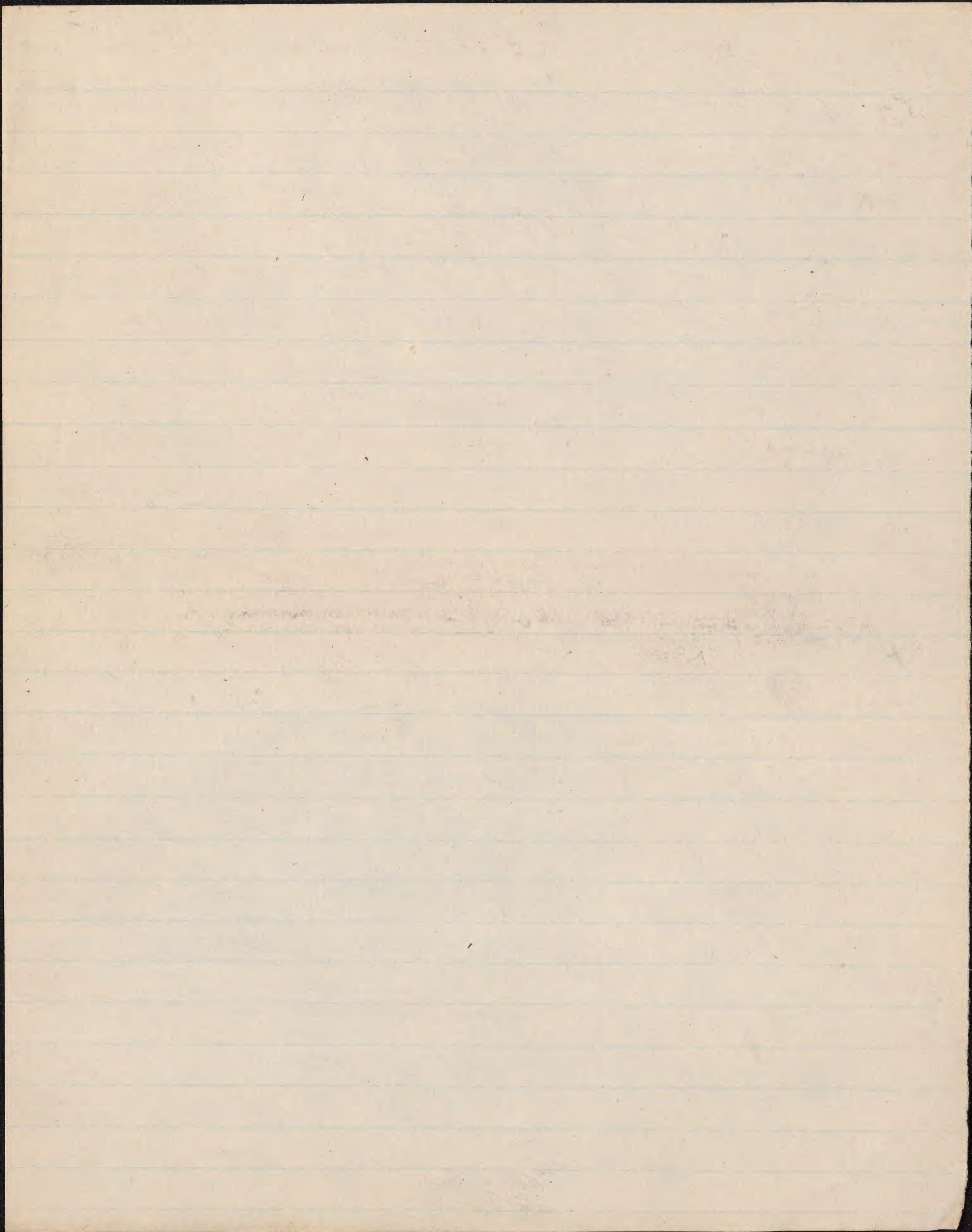


33

Mineralogy, botany, and comparative anatomy. The claims of these branches have been and are so amply ^{and fully} illustrated here by my colleagues, ~~that~~ it is not required for me to dwell upon them. Incidentally it may be mentioned that, in the University of Edinburgh and in those of Germany, a thesis on a subject connected with Comparative Anatomy is now accepted for a medical degree. Next to these studies, in a progressive order, must come those with which some, perhaps we may have to say many, medical students begin; Human Anatomy, and Human and Comparative Physiology. These would follow ~~the~~ General Pathology, ~~and~~ ~~the~~ Therapeutics, and Materia Medica; & Personal and Public Hygiene. Upon such a structure ^{when} well laid and strongly though compactly built, may be superimposed all the so-called practical branches; Practice of Medicine, didactic and clinical; Principles and Practice of Surgery; and the

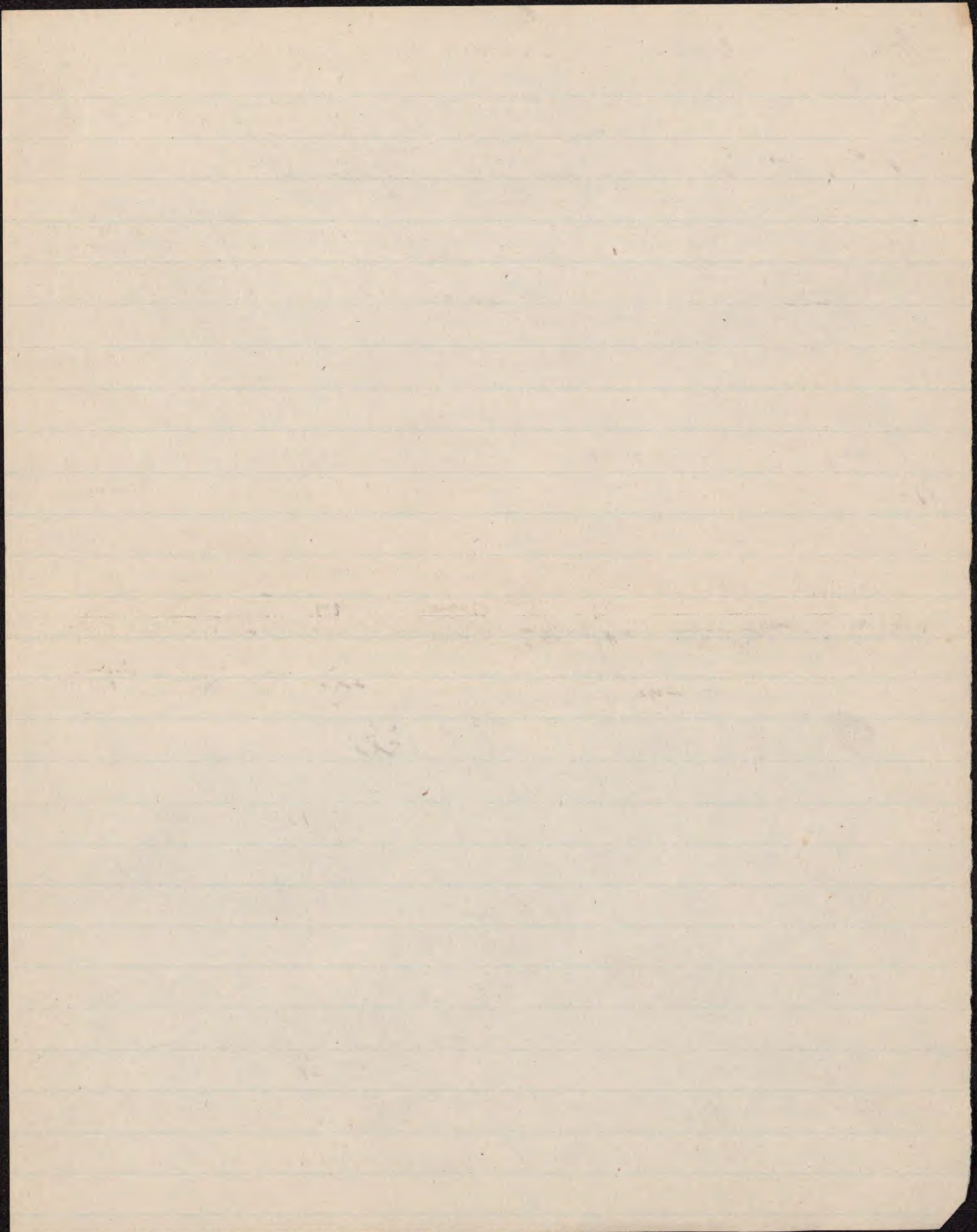


Science and Art of Obstetrics. But no plan (34)
of study for the physician can yet be complete,
without the extremely important addition of the
Principles of Medical Jurisprudence and
Toxicology. And the medical man is not
wise, who now-a-days fails to acquaint him-
self, practically as well as by books and
lectures, with all the modern instrumentalities,
employed for diagnosis, and for minor medicine
& surgery; ^{chemical analysis,} the microscope, laryngoscope, ophthalmo-
scope, ^{the} sphygmograph, thermometry, the atomizer, and
the rest. For the science and art of medicine
and surgery, like ^{the} other sciences and arts of
our age, are now ~~characterized~~ industriously inven-
tive; and their inventions must be learned and utilized.
I am not ready to admit that, as a very dis-
tinguished professor in another institution is
quoted as recently saying, ~~that~~ the course of
medical instruction in this city has not advanced
an inch in the last half century. My recollec-



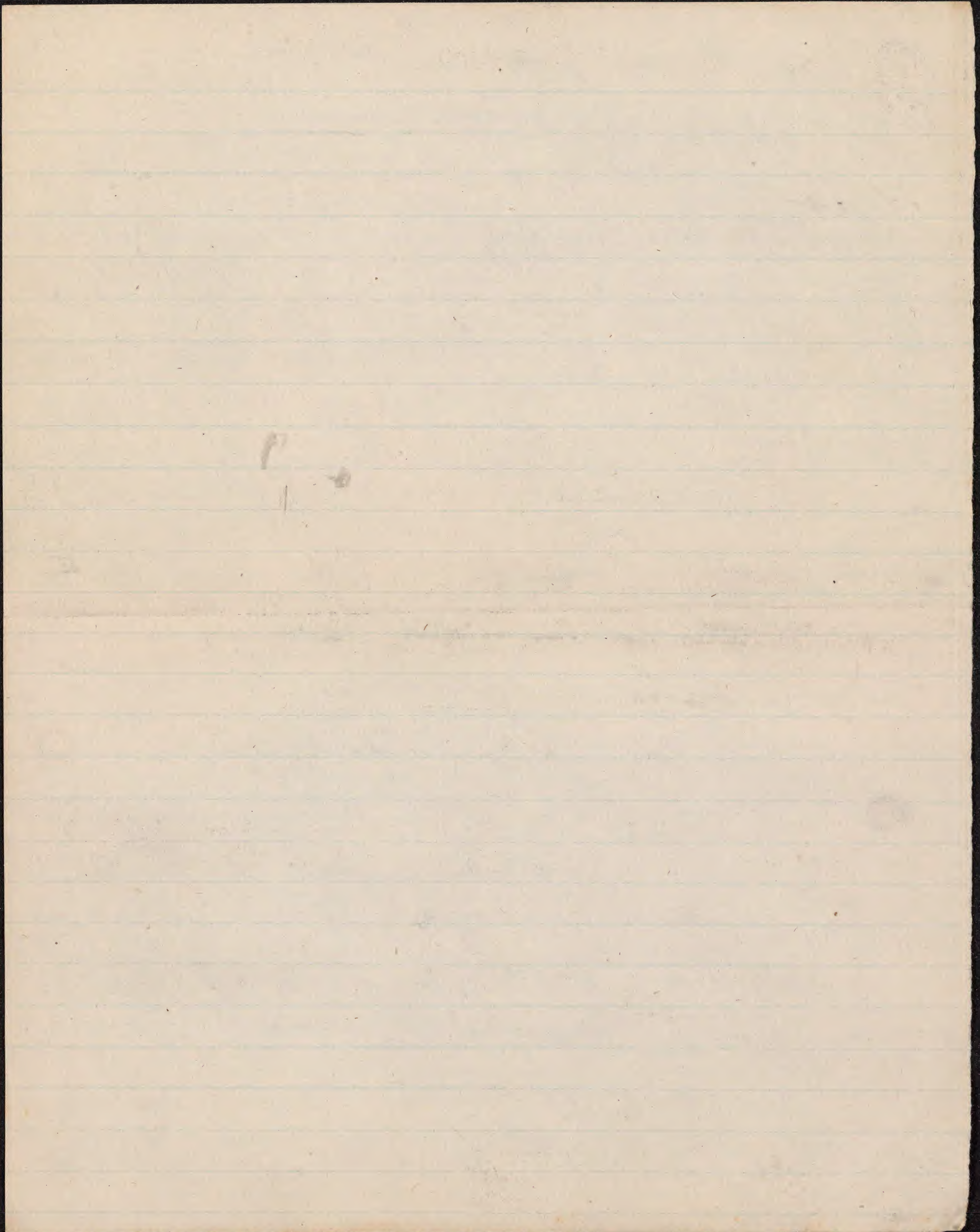
-tion of it goes back but 30 years. But (35)
I think too highly of the ~~proficiency~~ ^{proficiency} of that
~~the~~ ~~and~~ learned gentlemen's ^{own} mind; too much of
the ability and sagacity of those of his school;
and we know too much of the extension of the
teachings of and around this University, in
much less than 50 years, to allow for a moment
that such an allegation is correct. I have
said ^{that} ~~in~~ around as well as in it, there has been
and is continuous progress; for I trust that ~~the~~
~~higher~~ ~~as well as~~ ~~lower~~ ^{all connected with} authority in this insti-
tution may ~~always~~ ^{ever} be ready to ~~the~~ give cordial wel-
come and do full honor to ~~that~~ noble and laborious
corps of private and associated teachers who sur-
round this maternal centre, and ^{who} contribute so
essentially to the success of medical instruction here.

Now, gentlemen, in what has just been said
of a course of full medical study, a large prospect
has been opened. Who is sufficient for it all?
No 3 years' course can accomplish it. What then?
I can but add my ~~feeble~~ feeble voice to the



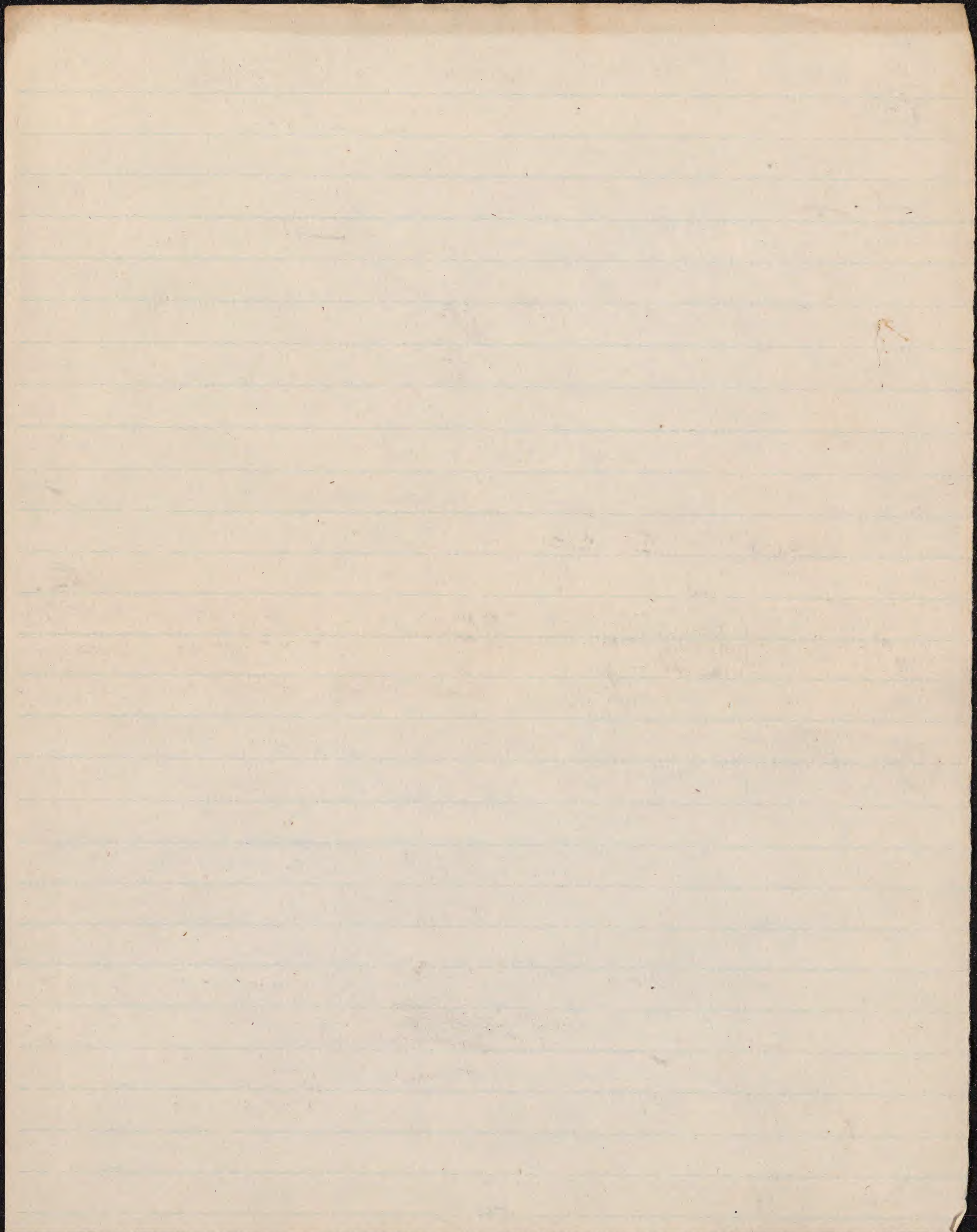
general

demand, growing increasingly loud every year, for a voluntary extension of the time, by agreement between the students and the Colleges. And a very important facilitation of the full preparation required to, I believe it will be, to adopt a really progressive plan, such as is advocated by Dr Parkes, Professor of Hygiene in the Army Medical School at Netley, England. By this, the hard work of the course is broken in two, by a system of successive examinations. At the end of the first two of the 4 years prescribed, the student may be examined upon the more fundamental or primary branches, as Anatomy, physiology, chemistry, & perhaps Materia Medica. Getting then his certificate of proficiency upon these, he may devote the greater part of his attention in the following two years to the full study of the more practical branches.



It seems to me obvious that such a (37)
plan must render the whole work
lighter, as well as more satisfactory.

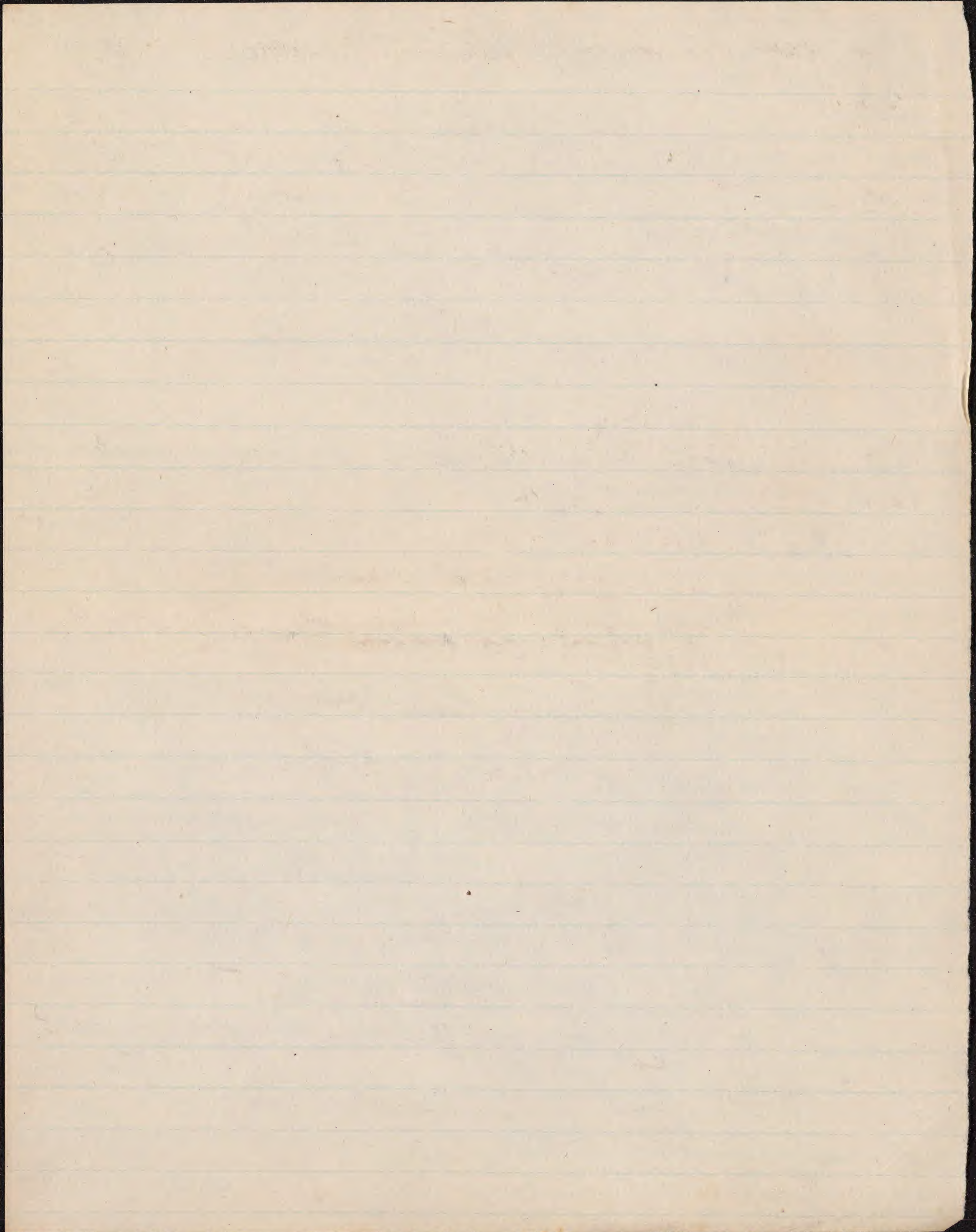
Of course it is yet true, that no
man can learn everything; and, also, that
no scientific drilling can, alone, make a
good physician. This ~~requires~~ ^{requires} more and other things
than ^{it must be in the man.} that. As Jenner himself said, — "neither
books, lectures, nor the longest experience are suf-
ficient to store his mind with the indescribable some-
thing a man of our profession should possess." In
this he only followed Bacon, on the subject of
General Science: ~~the instruments or auxiliaries necessary for~~
~~the~~ ~~and~~ "nec manus nuda nec intellectus sibi
permissus multum valet;" neither the unaided hand
nor the intellect acting alone, can accomplish
much. I have, ^{then}, placed before your minds a
high standard; but, whether attainable or not,
must not something like ~~it~~ it be our aim? It does



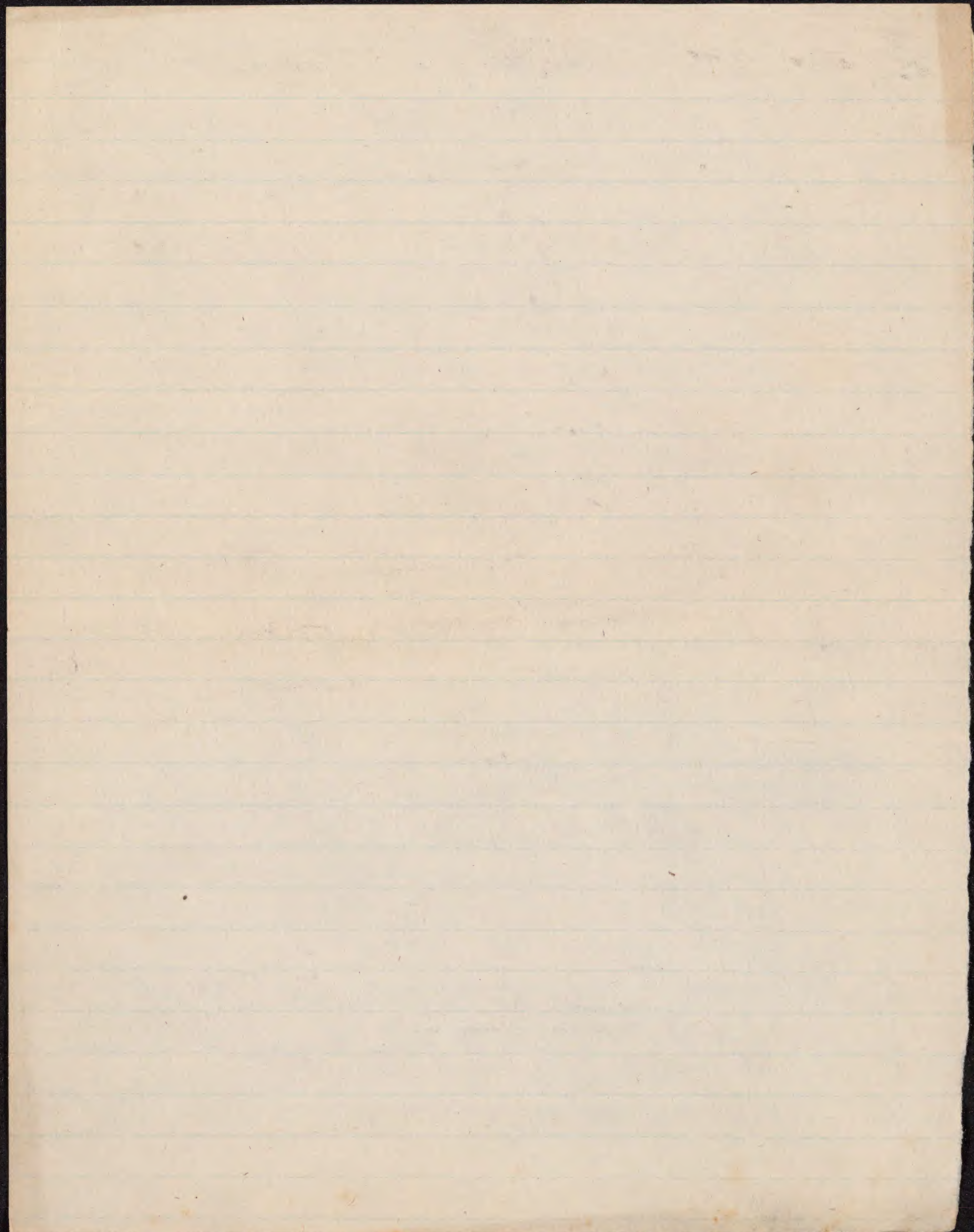
not appear to me to be now altogether (38

a matter of choice, but of necessity.

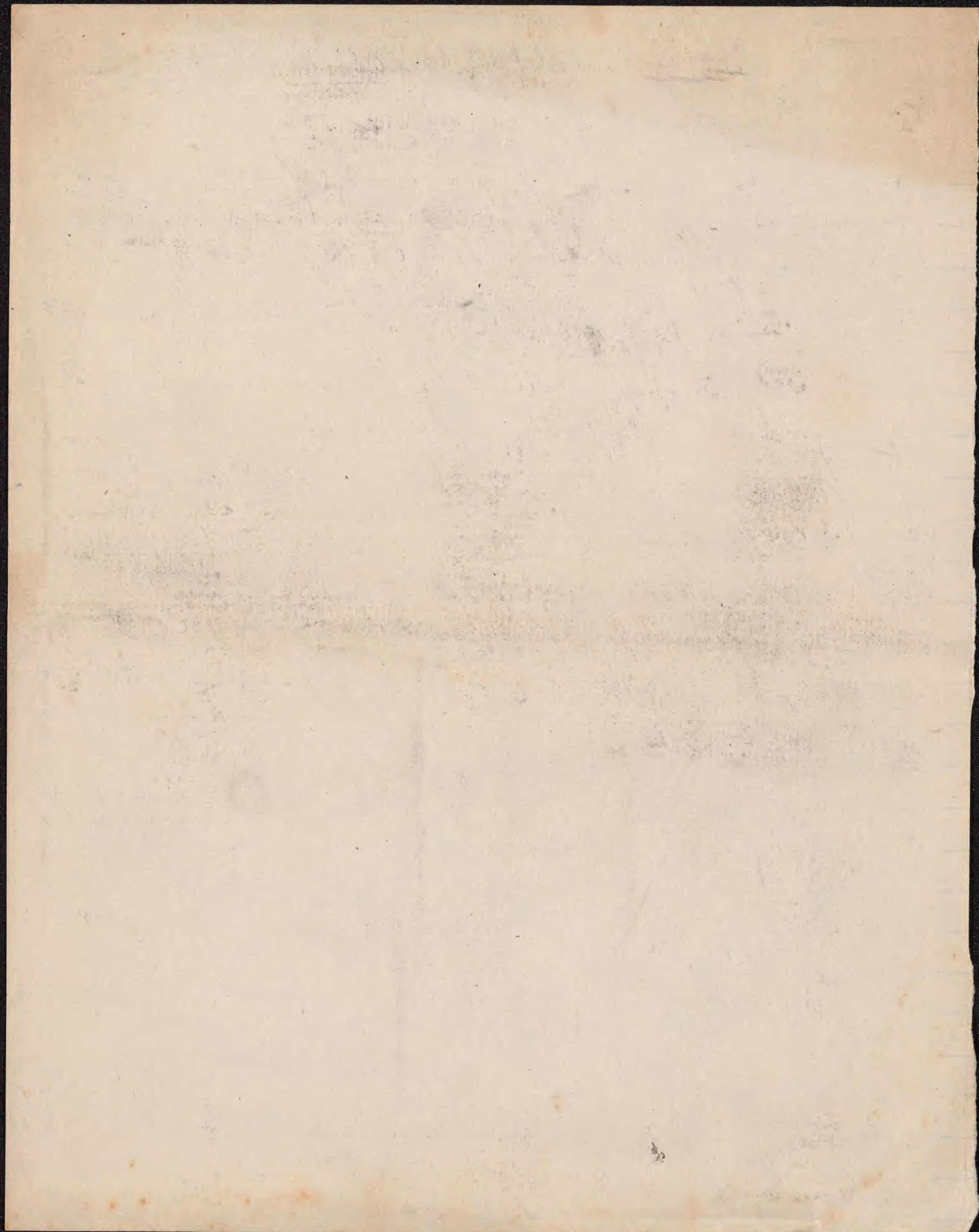
The times demand it; self interest requires it; the self protection of the profession makes it imperative. What is the position of the profession of medicine now? There is no more magic in it — no ^{more} superstition ^{as} of the Egyptian priest, or ^{the} medicine-man of the Indian wigwam, — not even the despotic authority of the physician of the last century. The mystery of medicine has gone; what is there left? Science, only; when not that, — nothing. We must stand and rise by our intellectual superiority and resources; only by these. As some one has said, the fact that physicians come all the time in contact with the bodies of men, women and children, confers a ~~sort of~~ ^{some} ~~greater~~ manual association upon their work; — somewhat more elevated only, in itself, than that of the barber, ~~the~~ the shoemaker or ^{the} tailor. The difference must be, really intellectual; — the Dignity of the vocation arises from its Science, as well



as from the importance of the issues of (39)
life and death with which it is concerned.
Dr. Rush observed, that, without science, ours is ^{even} a very humble and ~~degrading~~ ^{degrading} art.
But how familiar is the remark, that the
true place and dignity of the medical cal-
ling, ^{as it is,} are under-rated! In all countries this
is so; in aristocratic societies, ^{abroad,} and in official
rank and position, ^{everywhere,} Within the last year, we have
had knowledge of this, in an insult to the whole
profession, in the person of a medical officer of the
navy; against which, no matter how remote from
connection with naval and military affairs, I
would have a protest to go up from every medi-
cal school, medical society, and medical man;
until the voice of remonstrance should compel itself to be
heard. And, with this we find, that in the actions
of the present ^{United States} Congress, the tendency, instead of being
towards an elevation of the rank of medical
officers under government appointment, is towards its farther
subordination. May it not then be said, that the profes-
sion must grow more and more intellectual, more dis-



explored, more scientific, to oblige that (40)
recognition to be accorded which does not come
of itself? And, an added reason for this is, the
occasion for self defence against charla-
tanism;—in individuals and in systems. It
is hardly enough, now, to be called Doctor. Doc-
tor of what? From whence? The time may not
be far off, when, after the degree of M.D., it
may become desirable, and customary, to add the
name of the institution by which it was conferred.
When that time does come, we may ~~hope~~ and trust that
the institution within whose walls I now have the honor
to address you, may be ^{very} far from last or least in
the grade of value of its Honors. — Every one who enters
the profession of medicine, in ~~whichever~~ of its departments
he may choose or find the sphere of his labors,
is bound to do what he can, to uphold its
dignity, and to advance its usefulness. At every stage, no
matter how early, of his studies, this vein should be held
before the mind.



Let me, then, conclude ^{to-day,} with some (41)
of the words of one of the ~~most~~ most original sci-
entific minds in the profession of our age;— Rudolf
~~addressed by him, to a recent congress of Naturalists and Physicians, in Germany.~~
Virchow; We, physicians, have been in all times
the apostles of peace and conciliation; on the field
of battle, the surgeon performs his serious duties toward
all, without distinction of persons. But, we mani-
fest ourselves also in the combats of intelligence; and
this elevated mission, incumbent upon us ~~to-day,~~
to cause our voice to be heard in ~~the discussions~~ ^{discussions} upon
public ~~affairs~~ interests, — not in giving our aid to
the frivolous combinations of diplomacy, but ^{in teaching}
~~the men of the State~~ statesmen how they may ^{confer upon} ~~render~~
the people happy ⁱⁿ and healthy, — this task I dare
to hope we shall fulfil with indefatigable zeal;
and that every occasion of our reunion may be
one of newly recorded triumphs."

x et que chaque fois que nous nous réunirons désormais, ce sera
pour enregistrer de nouveaux triomphes.

"Qu'est que la maladie" de - Congress of European Naturalists & Physicians
Husum 1859. Rev. des Cy 1870.

